

AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

MAY 1, 1949

V. 89, #9

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The Nurseryman's Forte: To Make America More Beautiful and Fruitful

VOL. LXXXIX, No. 9

MAY 1, 1949

Founded 1904
With which was merged 1939
THE NATIONAL NURSERYMAN
Established 1893

* * * * *

Published on the
first and fifteenth
of each month by the
AMERICAN NURSERYMAN
PUBLISHING COMPANY
343 South Dearborn Street,
Chicago 4, Illinois.
Telephone: WAbash 2-8194

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Subscription Price:
\$3.00 per year; outside
United States, \$4.00;
Single Copies, 15c.

* * * * *

Advertising Rates
on application.
Forms close fifteen days
before date of issue.

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Entered as second-class matter
December 14, 1933, at Chicago,
Ill., under act of March 3, 1879.

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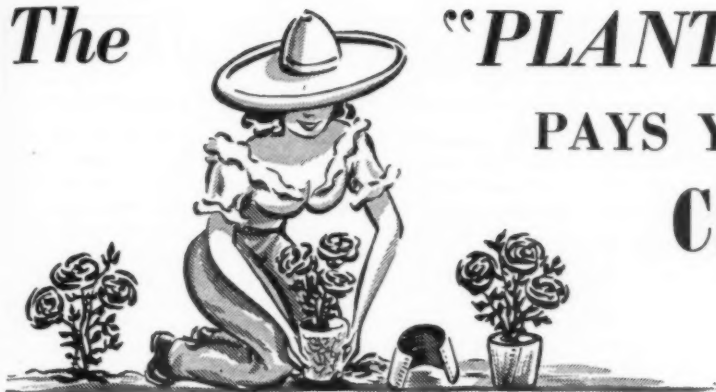
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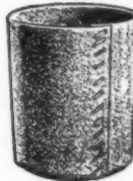
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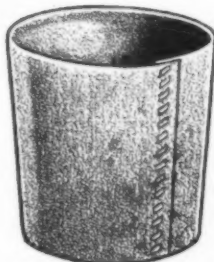
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AMERICAN NURSERYMAN

F. R. KILNER, *Editor and Publisher*

Joan L. Kilner, *Assistant Editor*

Editorial

SALES AMBITION.

Not long since, a nurseryman received in his office a young life insurance salesman, young in years and young as a salesman. The latter suggested to the nurseryman that a life insurance policy would be a good investment and that he would feel the payments scarcely at all if he purchased a policy for, say, \$2,000 even if he had other policies. The nurseryman was definite and abrupt in his refusal. After the young salesman had departed, the nurseryman remarked, "What a salesman! Starting on me at \$2,000! I've got a policy for \$5,000 and another for \$10,000. At least he could have flattered me by suggesting a policy for \$25,000 and then come down. I'm thinking of another of at least \$5,000."

Then the office door opened, and in came a couple seeking advice on planting the grounds about their new home, already in process of construction. The nurseryman knew just what they needed, he told them; he had designed grounds for lots the same size and shape as theirs, in the same subdivision. He could save them the cost of an individual plan. Here was one showing the house on the same site; some of the details could be altered in the process of planting, enough to make this job different.

The nurseryman detailed the trees to be set in designated spots in parkway and lawn. The size seemed pretty small to the husband, but he left things in the garden to his wife, who thought the nurseryman must know exactly what should be done. Indeed, he spoke fast and did not even hint that there was a choice.

So it was with the evergreens at the doorway, the hedge, the shrubs for screen, the perennial border and the bed of annual flowers for cutting. He pointed out their location on the neighbor's blue print and told promptly what he would put here and what there. And the total, because he was doing similar jobs in this locality almost every day, would be only \$250, really a rock-bottom figure and a bargain.

The nurseryman was not surprised that he booked the order promptly—he knew he was a good salesman and he knew his business thoroughly. But he would have been surprised if he

had heard the husband's comment as he drove away from the nursery. "My dear, we got off easy there. I expected to pay twice that much for planting our grounds. But that nurseryman didn't seem much of a salesman. He lacks ambition, to say the least."

NEW PLANTS.

In recent years recommendations have been increasing that hackneyed plants of lesser quality be dropped from nurserymen's catalogs and replaced by newer and better varieties. Though the rate of progress in that direction may have been slow, it has been steady and perceptibly increasing. There are some problems, from the commercial nurseryman's point of view, in the introduction of such plants to the public; these problems were recognized in some comments by Dr. Donald Wyman in the April 8 issue of *Arnoldia*, the bulletin of popular information of the Arnold Arboretum. He wrote:

"It is one thing to talk and write in glowing terms of some new or unusual woody plant, but it is quite another thing for would-be owners of such plants to find sources for them among commercial nurserymen. Most nurserymen are continuously looking for something 'new' with which to embellish their catalogs, but all too often there are restrictions placed about such plant materials. The 'new' plant must be easily propagated; the individual nurseryman would usually like to be the sole source for such a plant; it must grow quickly and make a sizable plant in a short time; it must be well known before he will propagate it on a large scale.

"This last requirement is often the end of many a good plant before it even gets into commercial production, merely because it takes considerable time and money in advertising to create the proper demand. Many a commercial propagating establishment is not equipped to take the risk. Articles and news releases from arboreta and botanical gardens frequently have all the information about such plants, but do not reach a sufficiently wide public to create the desired demand. Consequently, as a result, many a 'new' plant quickly reverts to the category of being 'rare,' and there it may stay indefinitely."

Yet in the bulletin Dr. Wyman

noted satisfactory progress and commented upon a list of fifty of the newer plants, most of them introduced by the Arnold Arboretum. He listed twelve nursery firms in whose catalogs one or another of the fifty plants appears in 1949. Other nurserymen may be propagating them as well. There are other plants equally important. The conclusion is that the efforts to popularize new and better plants is not in vain, and the efforts of those nurserymen making such plants available to the public are to be commended.

STABILIZING NAMES.

Those nurserymen who like to have their catalogs botanically accurate as well as good sales media frequently have their patience tried by botanists who rechristen plants under the present priority rule governing plant nomenclature. Various movements are afoot to revise the rule so that established plant names may be stabilized. One is in the Royal Horticultural Society of Great Britain, one of the largest and most powerful organizations having to do with plants.

Touching on this subject in his presidential speech at the last annual general meeting, Lord Aberconway told a story—no doubt intended to be humorous, but none the less to the point—about an ancient botanical work having been discovered in a German library before the war, which contained so many early descriptions of plants now known through the works of later authors that something like 300 changes in nomenclature appeared probable. Before this threat could be put into execution, related the R. H. S. president, the war started and a kindly British bomber destroyed the volume. If the story were true, the bomber probably would be greatly thanked by all nurserymen and most botanists.

Other organizations are equally desirous of amending the priority rule, which was intended to produce uniformity and reduce plant name changes to a minimum, but which has had the opposite effect. There are several ways in which the rule might be altered to advantage. A time limit might be fixed after which any name which had remained unchallenged should acquire precedence and the strict rule of priority should be waived. Another procedure would be the appointment of an international

[Concluded on page 10.]

Production of Hybrid Rhododendrons

PART I.

By James S. Wells

In these days of keen competition, customer resistance to high prices and a general reversion to more normal conditions, it is of vital importance that we do not overlook any possible source of revenue, or any method whereby we can foster interest in our industry. In this connection I should suggest that the economic importance of the evergreen hybrid rhododendron to the average nurseryman is considerable, yet, due to a wide misconception of the requirements of this type of plant, it has, broadly speaking, been sadly neglected.

The hybrid rhododendron is potentially everyone's plant. Interest is keen in all sections of the purchasing public, and it seems strange to me that a plant which so closely resembles the ubiquitous azalea in its requirements should have been left so far behind in the race for popularity.

To a certain extent, a reason for this apathy on the part of the nurserymen may be found in the admittedly more difficult methods of propagation which apply to rhododendrons. But in view of the great untapped potential that there is in the hybrid rhododendron, it might be of value if we considered in some detail the tried and proved methods of propagation which are employed in New Jersey at the Koster Nursery and also discuss other methods which will enable the smaller nonspecialist

grower to produce a few hundred plants annually to cover his local retail requirements.

Seeding and Grafting.

Rhododendrons can be propagated in any of the four usual methods applied to flowering trees and shrubs—from seeds, by cuttings of various types, by grafting and by layering.

Grafting is at the present time by far the most successful and practical method for all the hybrids except only the roseum elegans types, which can be successfully propagated from stem cuttings.

In order to carry through the operations of grafting, specialized propagating equipment is necessary. Although it is somewhat larger than is usually found on the average nursery, the equipment at the Koster Nursery is typical of a really up-to-date and modern propagating unit, and I shall therefore briefly describe the setup of our nursery. We have three high-span propagating houses, each 25x68 feet. Each is arranged with four propagating beds and two work aisles, the beds being fitted with four 2-inch hot-water pipes running underneath to give bottom heat. The base of each propagating bed is constructed of tiles, 8x8 inches, laid on T-iron supports, and on this base is placed the layer of well moistened peat moss in which the grafted plants are placed. These beds are then covered with light, single-pane sash, each 27x48 inches, to give the double glass covering.

We then have seven smaller single-span houses, each 180 feet long, with two benches, one on each side, and a central aisle. Two of these houses are equipped with bottom heat and sash to cover the benches for grafting; three have bottom heat only, and two are cool houses for hardening off grafted plants after the operation is complete.

The whole of this unit is heated by two oil-burning boilers, and electric circulators, one to each of the main propagating houses, are controlled by thermocouples set right into the peat in the propagating beds. The value of the thermocouples operating on the temperature of the peat cannot be too strongly emphasized, for with air temperature thermostats any sudden burst of sunshine cuts off the heat, when perhaps it is desirable to have heat circulating beneath the benches. This setup

can, in a much smaller way, be duplicated easily in almost any nursery with the use of subheating electric cables, although every care should be taken to insure that only first-class reliable equipment is used, for an unstable thermostat can quickly "cook" an otherwise promising batch of plants.

Now the first operation in the long sequence of events which will finally result in the production of a fine salable hybrid rhododendron is the growing of the understock upon which portions of the desired plants can be grafted. Two types are in general use, the first being hybrid seedlings, usually grown from seeds of roseum elegans, and the second, and in our opinion the best, being the common *R. ponticum*. Despite its drawbacks, there is no doubt at all that *R. ponticum*, due to its vigor and adaptability, will produce a salable plant in a shorter length of time. Mention of drawbacks brings up the question of disease, which at this point requires discussion at some length, as it has a direct bearing on our methods of culture from start to finish.

R. ponticum is unfortunately susceptible to the fungus disease commonly known as wilt, caused by the fungus *Phytophthora cinnamomi*, and it would appear that young seedlings of any size are susceptible to this disease, for it has been found to attack young plants from germination upward until they are 4 years old. The symptoms of the disease are unmistakable, for the young leaves of the growing point first wilt, and if the plant is pulled up, the outer tissues around the main stem at soil level will



Young Seedlings of Rhododendron Ponticum Six Months from Sowing, in Excellent Condition for Spotting On.



Layers in Seedling Flat. Note Thickness of Layer of Sphagnum Moss.

be found to be rotten, with the interior woody tissue brown and decayed. Needless to say, the plant is useless. What then can be done to control the disease? Fortunately there are two extremely important points which have been established in regard to development of the fungus. First in order of importance is the fact that the disease is rendered much less virulent by reducing the pH of the soil, artificially if necessary, to a point approximating 4.25 or less. Happily this acid condition is just what we require for the proper development of our rhododendrons. Recent experiments carried out at Boskoop, Holland,¹ to determine the optimum pH for rhododendron development have shown that there is a continuous increase in the size of root ball and general vigor and development of the plant down to a pH of 3.0, below which the experiment did not go. Further it has been proved in this country,² that a pH of 4.0 or less will greatly reduce the growth and development of the fungus, and therefore the first consideration of the careful grower who has in the past been troubled with the disease should be to adjust the pH of all soil used for the growing of rhododendrons to approximately 4.0 by the addition of either flowers of sulphur or aluminum sulphate.

The second point in the control of this disease is that the fungus resting spores, in which form the disease overwinters, appear to be susceptible to extremes of low temperature, and one or two good freezes will usually

clear the outside ground of any contamination. If, therefore, ericaceous crops can be kept from land to be used for rhododendrons for at least four years, this should insure its complete freedom from disease. A rotation of this type should be simple to carry out, for it does not preclude the land from being used for taxus or conifers which should grow satisfactorily notwithstanding the low pH. Finally, in our battle against this disease, every effort must be taken to see that the plants from the time they germinate until they are grafted continue to grow steadily and without interruption, thus insuring a regular and progressive development.

One last point before we leave this matter. It has been found that the variety of *R. ponticum* obtained from Holland and known as Hoogendijk is most susceptible to the disease,² while on the other hand it has been noticed that in the center of areas devastated by the disease, individual plants of *R. ponticum* will be found apparently healthy in every respect. These plants always show a characteristic red coloring of the main stem, and it may well be that in time a resistant type of *R. ponticum* may be found, in much the same manner as has been done for potatoes, against wart disease.

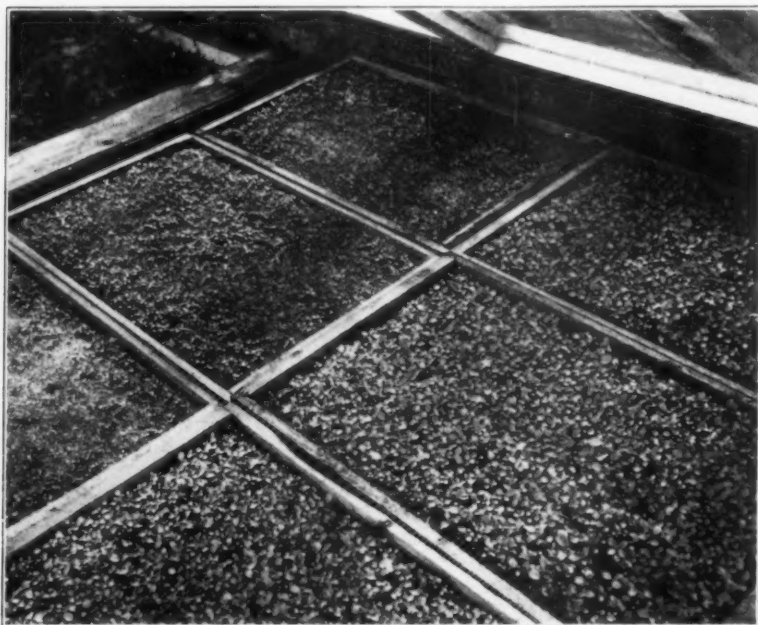
Sowing the Seeds.

Preparation for sowing the seeds commences early in December. The flats are first dressed with Cuprinol wood preservative and are set out to

dry. Dry shredded sphagnum moss, which we use in various ways and in considerable quantity, is brought in, well damped down and left for a few days, then damped again. An abnormal amount of water will be required thoroughly to damp the moss—it will hold fourteen times its own weight of water—but it is not fit for use until it is uniformly and thoroughly moist. If available, green live sphagnum is equally suitable. A mixture of half sharp sand and half Michigan peat is then prepared, and the flats are filled to within one-half inch of the top with this, care being taken to see that the whole is level and no dips occur at the corners. This mixture is then covered with a further half-inch layer of the damp shredded sphagnum moss, and the whole is carefully consolidated and pressed down. The final result is a flat filled with the mixture and evenly covered by a firm layer, less than one-half inch deep, of pure sphagnum moss, smooth and consolidated, ready to receive the seeds. The act of pressing down the two layers will leave a quarter-inch space for watering.

As soon as possible after Christmas, sowing commences, and the seeds, which are unusually fine, are sown by hand. We have attempted from time to time to mix the seeds with dry sand or some similar filling material, but we have found it more satisfactory to give the job to our most skilled propagator and let him sow, holding the seeds in the cupped palm of the hand and gently shaking them out onto the surface of the flat. The seeds are not covered in any way, but just come to rest on the top of the moss, and then, when the flats are in their final position, they are carefully sprayed with an extremely fine nozzled spray to damp the seeds and settle them on the moss bed. Great care is necessary to insure an even sowing, for the seeds are winged, and this fact, coupled with the small size of the seeds, does not allow of accurate control when sowing. However, one should aim at sowing at the rate of 1,000 seedlings per standard flat, which is sufficiently thin to allow the young plants to develop into handable size without overcrowding.

These flats we then place in a propagating bench and cover with double glass to insure an even degree of temperature and humidity. We use double glass because our houses are fitted that way, but the small grower can obtain just as good results by covering each individual flat with a sheet of glass and shading that with newspaper. Although it will be found



Germination in Standard Mixture of Sand and Peat (Left) and Sphagnum Moss (Right).

that with the use of sphagnum moss the normal drying out associated with soil-filled flats is not nearly so noticeable, it must be borne in mind that the seeds are, of course, too small to cover and that every precaution must be taken to insure that not even for an hour does the surface of the moss, which will include the germinating seeds, become dry. Ten minutes of hot sun on a dry flat early in the morning can do untold harm to the delicate young radicals just pushing their way out from the seeds into the moss. Every morning we lift our sash and carefully check each flat for the least sign of drying out, and if any is seen, the flat is given careful and special attention with our fine sprayer. The whole batch then receives a general and gentle spray. The sash are allowed to remain up for half an hour for the circulation of fresh air and then are closed down again, being finally covered with linen. A temperature of from 65 to 70 degrees is maintained, and this steady temperature, coupled with the humidity and partial shade, produces prompt and even germination.

Damping-off in this young seedling stage may be noticed as soon as the young plants are in rough leaf, a condition which we have found can be practically eliminated by the use of sphagnum moss.¹ It is not unusual, however, for the young plants to be attacked by mildew or some similar fungus trouble, and when this occurs we have found that a generous spray with normal strength Semesan will almost invariably give complete control.

The use of the sphagnum moss layer also results in a much stronger and more even development of the *R. ponticum* seedlings, as compared with the conventional peat and soil mixture.

If the peat-sand mixture below the moss layer is omitted and the seeds are sown on pure sphagnum moss, it may be found necessary gently to feed the young seedlings as they come into rough leaf, for there is little or no available plant food in the pure moss. This can easily be done by watering the flats with a suitable nutrient solution, made by adding two teaspoonfuls of a 4-12-4 can be used, but at the rate of five or six teaspoonfuls to the gallon. Any insoluble residue left in the water should be discarded. However we have found that the use of the sand-Michigan peat mixture usually replaces the necessity for using any nutrients, and in this

way one can normally expect to develop the seedlings to pricking out size without trouble.

From the commencement of germination the care afforded the young seedlings must be painstaking and constant. This is particularly vital on the question of watering, for too much or too little can be equally disastrous. But given this attention,

long and the same across, but the profusion of them causes a striking showing. On this account the plant should be placed in a suitable location, not used as a facing shrub or in foundation plantings, but given a place in the rock garden or against low evergreens where its spring display is suitably set off.

The leaves are in pairs, about two



Bench of Flats in Greenhouse, Showing the Setup Used for Germination.

the young plants will develop steadily and, approximately six months from the time of sowing, will be ready for pricking out into flats.

¹ "Yearbook of Trial Gardens at Boskoop," by Dr. E. F. Jacobi.

² Bulletin 615, "Rhododendron Wilt and Root Rot," by Richard P. White, February, 1937. (New Jersey Agricultural Experiment Station, New Brunswick, N. J.)

³ "Sphagnum Moss for Seed Germination," Leaflet No. 243, by U. S. Department of Agriculture.

COVER ILLUSTRATION.

Daphne Genkwa.

Daphne genkwa, the lilac daphne, offers a profusion of small lilac-colored flowers in early spring, before the appearance of its leaves. Growing to an average height of three feet, it makes a well rounded shrub with distinctive upright branches. Shoots of the previous year's growth are lined with clusters of the tubular lilac flowers. Singly these are small, about one-half inch

inches long and grayish-green in color, turning yellow and falling with the first frosts. The lilac daphne blooms when quite small, but the flowers have no fragrance.

Daphne genkwa is a native of China and Korea, but it received its specific name from the term applied in Japanese gardens, where it was noted by Dr. Philip van Siebold, a Bavarian who went to Japan in 1823 as physician for the Dutch East India Co. and later established a nursery at Leyden, Holland. This daphne was one of the plants sent home to England by Robert Fortune when he visited China in 1843 on commission for the Royal Horticultural Society.

Well drained soil is required for the lilac daphne, with a good proportion of peat moss or leaf mold. Limestone is not desired as in the case of *Daphne cneorum*, but an ample supply of sand or small gravel to insure good drainage is preferable. In heavy or poorly drained soils the plant will not thrive. Continued temperatures below zero may cause damage, particularly if the preceding year's growth is not well ripened.

AMERICAN ASSOCIATION OF NURSERYMEN

RICHARD P. WHITE,
EXECUTIVE SECRETARY



636 SOUTHERN BLDG.,
WASHINGTON 5, D. C.

PRICE ANALYSIS.

An analysis of prices of nursery stock as listed in 1949 spring catalogs has been completed by the American Association of Nurserymen, and the summary data charted on the graphs reproduced on this page show price trends as indicated by prices of nursery stock in spring catalogs from 1940 to 1949 inclusive, with the 1940 prices taken as a base of 100.

In graphs A and B, the solid line represents fluctuations in the price index of standard fruit nursery stock, including apples, peaches, plums and cherries; the long-dash broken line shows fluctuations in the index of small fruit nursery stock prices, including raspberries, strawberries and grapes, and the short-dash broken line indicates fluctuations in the index of ornamental nursery stock prices, as represented by a selected list of ornamentals.

Wholesale prices are based on the 100 rate except in the case of hedge plants, where the 1,000 rate was used. Retail and mail-order prices are based on the each rate, with the ten rate being used for hedge plants.

In graph C, the solid line represents fluctuations in the wholesale price index of all nursery stock, including standard and small fruits and ornamentals; the long-dash broken line shows fluctuations in the retail price index of all nursery stock, and the short-dash broken line rep-

resents fluctuations in the mail-order price index. In the years 1940 to 1948, the mail-order index was for fruit only, but in 1946 a new index was established for mail-order prices. This includes all nursery stock and covers the same items as the retail and wholesale indexes, so that the three indexes will be directly comparable in future years.

SOCIAL SECURITY.

Appearing in April before the ways and means committee of the House of Representatives at Washington, D. C., Dr. Richard P. White, executive secretary of the American Association of Nurserymen, presented the attitude of the association on H.R. 2893, extending the coverage of social security.

According to a mail survey of the membership in 1948, to which only twenty-eight per cent of the membership responded, two-thirds favored extending the coverage to agricultural employees so that they might enjoy old age benefits.

Only a small percentage favored extension for unemployment compensation, most of them being critical of the present administration of the act.

Since some firms have set up their old age pension schemes, it was urged that any extension of coverage be made with provisions to protect programs already in effect.

POSTAL RATE INCREASES.

Two bills now before Congress call for increases in third-class and fourth-class postal rates and would abolish bulk mailings. These bills, H.R. 2945 and S. 1103, would be a serious blow to the nursery business if passed. Statements on these bills were recently made before the post office and civil service committees of both House and Senate by Dr. Richard P. White, executive secretary of the American Association of Nurserymen; George E. Rose, president of the National Mail Order Nurserymen's Association; Clifford R. Emlong, president of the Emlong Nurseries, Stevensville, Mich., and L. R. Sjulín, of the Interstate Nurseries, Hamburg, Ia.

Mr. Emlong contended that increased third and fourth-class rates

would be extremely detrimental to nurserymen's business volume because, he said, "We cannot raise prices to absorb the increased costs. Our economy seems to be in a down price trend."

Dr. White asserted that, since horticultural catalogs are largely educational in nature, it is unjust to raise their mailing costs. He declared that much of the material carried by the post office as second-class matter is less educational than horticultural catalogs.

Mr. Rose attacked the government's attempt to make the post office department self-supporting, saying that it is a necessary agency serving every person in the United States and should be tax-supported like other departments.

Mr. Sjulín commented that, if these third and fourth-class increases were adopted, mail-order firms will be the most severely handicapped. He said: "If the Congress decides that second-class matter should be handled at a loss, then it should be openly subsidized and the loss should not be charged to the other postal departments." He stated that the higher postal rates effective January 1, 1949, will cost his firm an additional \$32,000 this year. The proposed rates in H.R. 2945 would cost an additional \$48,500.

An enlightening fact brought out by Mr. Emlong is that in 1947 third-class and fourth-class mail together produced eight times as much revenue as second-class mail, while their combined weight was only three times as great.

OBITUARY.

Malcolm C. MacKenzie.

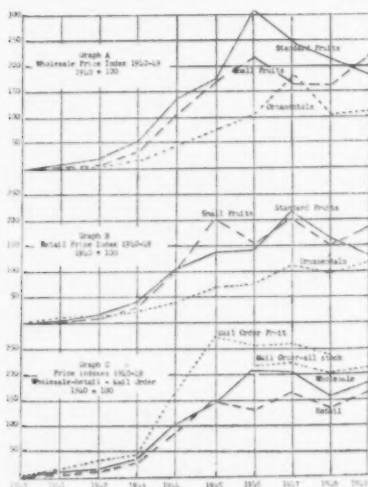
Malcolm C. MacKenzie, treasurer and general manager of the Benjamin Chase Co., Derry Village, N. H., died March 31. For more than twenty-five years Mr. MacKenzie had been with the firm as an engineer and designer of machines. He had served as vice-president, treasurer and general manager during the past thirteen years.

STABILIZING NAMES.

[Concluded from page 6.]

committee to consider proposed changes under the existing priority rule, with authority to reject such changes where there would be no genuine gain by it.

Though slow in getting headway, perhaps these proposals will in time bring more stability to plant nomenclature.



Graph of Price Analyses.

California A.A.N. Leader Heads Old Firm

President and manager of Leonard Coates Nurseries, Inc., San Jose, Calif., Ray Hartman has been connected with the nursery business for over forty years. To further the interests of the industry, he has, at one time or another, headed most of its organizations in his section and state. As representative of region VI on the executive committee of the American Association of Nurserymen, he is concerned now with preparatory arrangements for the A. A. N. convention to be held at San Francisco in July, working closely with Jack McDonnell, Oakland, Calif., who is general chairman of the arrangements committees.

Before taking over the Coates nurseries, Mr. Hartman learned the nursery business from many angles. Besides occupying several positions in general nursery and landscape work, he did entomological work for the United States Department of Agriculture, studying at Stanford University the insects affecting shade, forest and ornamental trees. He also served as superintendent of nursery service in the California state department of agriculture, where he was in charge of licensing, inspection, etc.

Mr. Hartman has also been active in civic affairs. He is currently on the board of directors of the San Jose chamber of commerce and of the Santa Clara Rotary Club, an executive committeeman for the Santa Clara County Fair Association and a member of several fraternal orders.

In addition, he is a popular speaker at conventions and at meetings of garden clubs and civic organizations.

The genial Mr. Hartman has three children, all married, and nine grandchildren. His two sons have helped him in the nursery and on landscape jobs. Mr. Hartman considers both his family and the nursery business as his vocations and his hobbies. After his many years' association with both, they are still the source of his greatest pride and pleasure.

Besides the A. A. N., the trade affiliations of Mr. Hartman or his firm include the National Landscape Nurserymen's Association, California Association of Nurserymen, California Horticultural Council, Central California Nurserymen's Association, Santa Clara County Nurserymen's Association, the Western Shade Tree Conference and the National Shade Tree Conference.

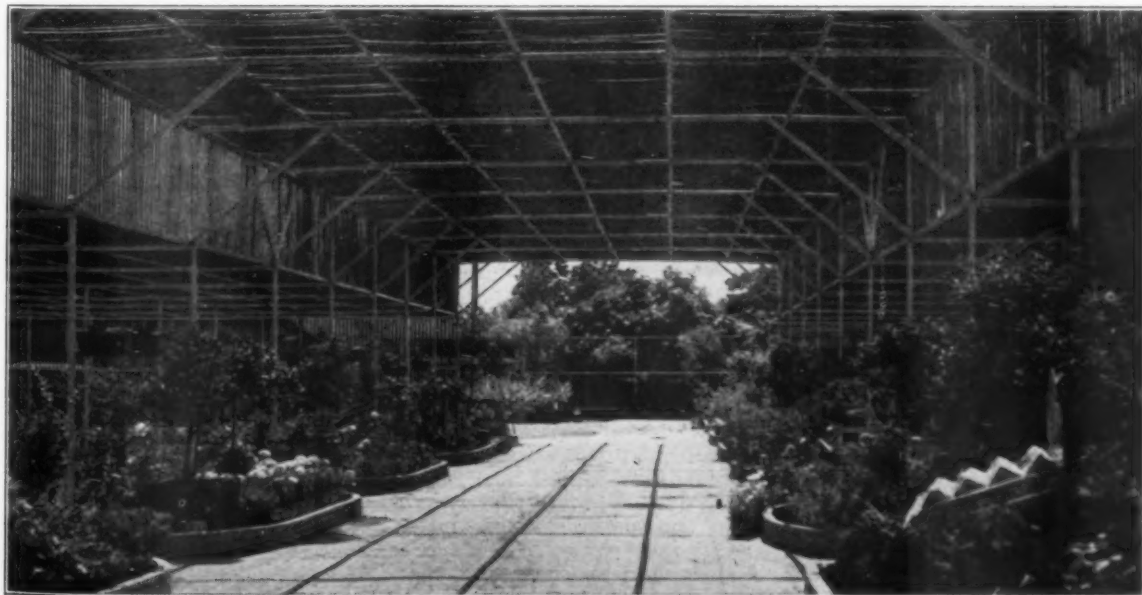
His value in those organizations is attested by the fact that, besides being at present a member of the executive committee of the A. A. N., executive committeeman at large of the National Landscape Nurserymen's Association and president of the California Horticultural Council, he has been president of the old Pacific Coast Nurserymen's Association, president of the California Nurserymen's Association, president of the Central California Nurserymen's Association, president of the Western Shade Tree Conference and president

of the Santa Clara County Fair Association.

Since taking over the not-too-profitable Leonard Coates Nurseries, Inc., in 1925, Ray Hartman has more than tripled its business. While he has worked hard and has always enjoyed his work, other important factors in the firm's success have been his wide nursery experience, his stress upon quality of products and his treatment of customers and his employees. He has about eighty-five men, ten of whom have been with him over twenty years.

Following the trend toward specialization, he has added nurseries and salesyards at Morgan Hill, Santa Cruz, Brentwood and Oakland. The retail nursery at San Jose is the main distributing point. At Oakland is the other retail nursery. At Morgan Hill are done the grafting, rooting and growing in containers. At Santa Cruz is produced the balled stock, and at Brentwood are grown the fruit trees.

At present, the nurseries' wholesale and retail business are about equal in volume. Leonard Coates Nurseries, Inc., is one of three firms in northern California selling wholesale in quantity. In addition, Mr. Hartman has added a landscape service, which employs about thirty men. Its accomplishments include Camp Roberts, Union square in San Francisco and 3,000 homes for the Mare island housing project. In the past five or six years, industry coming into



Main Lath House at Main Salesyard of Leonard Coates Nurseries, Inc., at San Jose, Calif.

the Santa Clara valley has provided many substantial landscape jobs. Recently completed was a \$50,000 contract with the army engineers for the Golden Gate National cemetery, at San Bruno. In San Francisco, 100 blocks along California avenue are being planted with 734 sycamores and 130 ginkgos.

As might be inferred, the Leonard Coates Nurseries, Inc., grows a wide assortment of stock, having great variety in everything but subtropical and citrus plants. Mr. Hartman is strong for native California trees and shrubs.

The San Jose headquarters are the hub of all the Coates nurseries. They include a retail nursery, a flower shop and the landscape service. They have a good location on the Alameda highway between the business district of San Jose and Santa Clara University. Gordon S. Wallace, with the firm twenty-four years, is in charge of the office, and Bill Marken, of the nursery.

This nursery is a model of simplicity, yet of attractiveness. The salesyard is approximately 168x250 feet, set back thirty-four feet. On one side of the driveway are a pool and waterfall; on the other is a rockery. Mr. Hartman plans to replace these soon with twin buildings, housing the flower department in one and the landscape department, with offices and cashier's space, in the other.

The big green lath house, pictured on page 11, is in the shape of a capital U with one end extended. The posts are of 2-inch angle iron in two inches of concrete. They are twelve feet apart except in the center, where the driveway has a 24-foot span. This span is fourteen feet high, handy for loading and unloading and for customers' exits after sales. The lath areas on either side are ten feet high, and the roof is braced by 2-inch T iron. All metal is spot-welded. The blacktop paths are four feet wide and twenty-four feet apart.

Within the lath house, each bed on either side is 20x60 feet, with a division down the center of each. Mr. Hartman is well pleased with his experiment of red bricks for outlining the borders. In five beds the bricks are cemented on edge for gallon container stock. The five opposite ends are marked with bricks in 4-course flat layers, for the balled stock. Farther down on the gallon side are two beds outlined with 5-course cemented bricks and filled with sand, for the bare-root and deciduous fruit tree stock. The remainder of the space on the opposite side is utilized for 5-gallon cans and specimens in larger containers.

At the extreme end is a protected section for citrus and subtropical stock, which has quickly adjustable top lath and drop curtains that are used in unfavorable weather. Near the center is a large section, partly surrounded with a bench three feet high and four feet wide, for the annual and perennial plants in flats, with a center bench for display.

On either side of the driveway are four semicircular beds of 3-course pale green bricks, which Mr. Hartman uses as display beds to splendid advantage. Hanging baskets of tuberous-rooted begonias, fuchsias and lantanas are evenly distributed on both sides of the bedding plant section. Definitely practical, without frills or fancy designs, this is a neat, light, convenient and attractive setup.

At Morgan Hill is grown the lining-out stock which supplies Santa Cruz and Brentwood. There the

balled ornamentals. All stock there is grown in the ground. Credit is due Fred Davis for his exceptionally neat and attractive layout of broad-leaved evergreens and conifers.

At Brentwood are fifty acres of deciduous fruit trees and shade trees. This district is free from peach root borers and other pests. This location, which provides the necessary water, heat and soil for the Leonard Coates' bare-root stock, is under the supervision of A. H. Strom.

It has been a long time and many changes have taken place since Leonard Coates used to take his horse and cart into the mountains to make his sales. He established his nursery at San Jose in 1878. However, he was better known for his ability and contributions as a nurseryman than a businessman.

When Ray Hartman purchased the nursery in 1925, he kept the name Leonard Coates because of the founder's fine reputation for things horticultural. Since that time Mr. Hartman has not only made the nursery a financial success; he has retained and expanded the policies of Leonard Coates. His quality merchandise and friendly manner have steadily increased the nursery's reputation.



Ray Hartman.

Coates nursery propagates only container stock. Mr. Hartman reports good results from lining out in cans. At present, about 75,000 5-gallon cans and 225,000 one-gallon cans are used, in addition to 225,000 pots. He estimates one man can pot 500 ones per day. One of their trucks carries 1,700 of these.

At Morgan Hill, Foreman Harry Marken has 200,000 ornamental cuttings. Mr. Hartman says success with these ornamentals is due largely to the compost heap. This pile is prepared of various soils and manure one year in advance.

Luther Burbank said that at Santa Cruz one could grow the greatest variety of nursery stock in California. Mr. Hartman has chosen this somewhat subtropical area for its lack of extreme cold as the site for Coates'

CONNECTICUT NURSERIES LANDSCAPE ECONOMY HOME.

The landscaping of the "basic economy house," constructed by the Home Builders' Association, West Hartford, Conn., for the home show, April 2 to 9 at the West Hartford state armory, was done by the Peter Cascio Nursery, West Hartford, and Scott's Nurseries, Bloomfield.

Tailored to fit the pocketbooks of veterans with modest incomes, the 4-room shingled house, all on one floor, was designed for the \$8,000 market. The demonstration house, at the home show, which was sponsored by the Home Builders' Association and the Hartford Times, was completed except for plumbing and insulation and was completely furnished by a local department store.

In landscaping the house, the Peter Cascio Nursery was able to use some of the plants that did not force in time for the flower show sponsored by the Hartford Times two weeks before the home show.

OPENING of the Beckley Nursery Co., 1213 South Kanawha street, Beckley, W. Va., has been announced. Charles Snead is the operator of the new nursery, and E. L. Zimmerman is the landscape architect.

Industrialization in Practice

PART IV

Harvesting undoubtedly requires much more of the entire effort of production than nurserymen realize or are willing to admit.

Experience has taught us that it is hard to pull a digger back of a tractor and keep it equally balanced under the row, also that it is hard to keep the digger down in too dry or stony soil. The illustrations show a custom-made digger mounted on a Farmall M. There are 18-inch blades, which are controlled by double-action hydraulic controls. The controls are powerful enough to lift the tractor clear of the ground, and the blades can be run exactly as wanted. As the blades are mounted in front, they are readily held true over the row. The use, of course, depends upon 2-row planting. This digger was made in 1948 and is new. The tractor had ample traction with the tires shown. New tires have since been added, as those shown did not have traction enough for plowing.

This digger can cover an acre an

hour readily in root-pruning where the operation is continuous. Our use is mostly for root-pruning evergreens.

We use a Champion potato digger for shrubs standing two or three years. Shrubbery is planted on light soil, and this digger is operated by power take-off from the tractor. It is really a tough job, and it was necessary to enlarge the clearance and to increase the durability by doubling the driving sprockets and chains. This digger does do the job; not only does it loosen the plants, but it shakes them out reasonably well and leaves them on top of the ground. Rows previously run or cut loose will not come up through a potato digger without clogging up.

Spraying is also largely done by a tractor-drawn outfit with booms covering six rows at a time.

Horses or mules must be discarded wherever possible. Men driving horses spend more time taking care of the animals than is needed to care for a tractor, even when the animals

are used often. Then there is the probability that the animals are fed and cared for twelve months and used only three. Also, compare the efficiency of the two methods. A tractor goes faster; it moves all the time, while fifty per cent of the time is lost while the men claim to be resting the animals.

In our case we have decreased our use of horses from six to three in the past year, and by planting shade and large materials in wider rows we shall be able to cut from three to one shortly. When some tractor company can devise a narrow, safe high-clearance tractor, all horses will be discarded. [The End.]

HOLSINGER BUILDS.

A \$10,000 project to add a small greenhouse to its sales building and to construct a large evergreen slat shade house is in progress at the Holsinger Nursery Co., Kansas City, Kan. The nursery, founded fifty years ago by Maj. Frank Holsinger, is now operated by the major's son-in-law, Laurence E. Wilson, and the latter's two sons, Laurence E., Jr., and Marshall.

In addition to increasing the efficiency of operations, the building project will modernize the layout of the 100-acre nursery, according to L. E. Wilson. The buildings were designed by L. E. Wilson, Jr., a landscape architect, and are being constructed by members of the firm. They will double the improvements made previously at the nursery when a small salesroom and a large warehouse were built.

L. E. Wilson has been associated with the Holsinger Nursery Co. for thirty-six years. When Major Holsinger died, Mr. Wilson entered into partnership with the major's two sons, George and Gerald, both of whom have died since that time.

KENNETH HVISTENDAHL has joined the staff of the Worthington Green Thumb Nursery, Worthington, Minn., as assistant manager, according to Dale Hvistendahl, who in March became active manager. The firm was started last year. Property has been secured at Sioux Falls for a branch sales lot. Both nurseries will be identified by the green thumb symbol of the concern in large neon signs.



Top: 2-Row Digger with 2-Way Hydraulic Control, Front View. Bottom: Side View.

Nurseries in South Africa

By T. Hilling

Leaving from the airport at Heath Row, England, August 21, 1948, T. Hilling, of T. Hilling & Co., Chobham, Woking, Surrey, England, began a 40-day plane tour of Africa, which took him to Tripoli; Cairo, Egypt; the Anglo-Egyptian Sudan; Nairobi, Kenya Colony; Kongwa, Tanganyika; Johannesburg, Pretoria, Port Elizabeth, East London, Cape Town, Durban, Pietermaritzburg and other cities. Mr. Hilling, who attended the 1947 convention of the American Association of Nurserymen at Boston, Mass., as the official representative of the Horticultural Trades' Association of England, covered approximately 20,000 miles during his African trip, and most of his time was spent in visiting nurseries in the Union of South Africa. He left Johannesburg by plane October 3 for the return trip and arrived at Heath Row, England, October 5.

The following comments which Mr. Hilling made on the nurseries in South Africa may prove of interest to nurserymen in the United States:

"The day after I arrived at Nairobi, I had lunch with Dr. and Mrs. Flowerdew. Mrs. Flowerdew is the former Margaret Stewart, daughter of Mr. and Mrs. Martin D. Stewart, of D. Stewart & Son, Ferndon, Dorset, England. Another of the Stewarts' daughters, Betty, visited nurseries in the eastern and middle western United States in 1947 and attended the A. A. N. convention at Boston.

"Early the next morning Graham Bell, of the Closeburn Nurseries, the only nurseryman of any consequence at Nairobi, proposed coming out to see him. I obtained a car to take me to the nurseries, ten miles away, and found Mr. Bell waiting for me. He proved a most interesting gentleman and an excellent plantsman, and although his nurseries had suffered because of the labor shortage during the war, he was building up his business again. Mr. Bell has a fine collection of tropical and subtropical ornamental trees and shrubs, including twenty varieties of bougainvillea which range in color from bright orange to crimson. When given support, these plants grow to great heights; I saw some which had reached the tops of trees from sixty to eighty feet in height and which were a mass of flowers. Single and double poinsettias of scarlet, pink and cream; bignonias; jacarandas; Grevil-

lea robusta, one of the most popular shade trees in South Africa; erythrinias; callistemons; clerodendrons; tacsonias; tecomas; neriums; fuchsias; hibiscus; roses; herbaceous plants and gerberas were also grown at the nurseries. Mr. Bell's catalog of more than 200 pages was the most comprehensive of those I saw during my tour.

"In addition to operating the nurseries, Mr. Bell grows coffee, for which he has his own grinding and roasting plant, and he markets the coffee himself direct to retailers and consumers. He is also an amateur photographer and has an excellent collection of color photographs of flowering trees and shrubs.

"When I reached Johannesburg, the city of gold, I learned that it was not well suited to the nursery trade since it has a hot, dry climate during most of the year. To obtain water for irrigation in the area, nurserymen must either buy land near a stream or bore wells. The largest growers at Johannesburg seemed to be Messrs. Herroldts, who specialize in roses and fruit trees, growing the latter on a branch of the nursery about seventy miles from the city. Their production of roses is about 125,000 per year, budded on multiflora japonica cuttings. I noticed some *Populus simoni obtusa* at the nursery, grown from stock that I was told I had sent over before the war. This variety does well in South Africa. Other types of poplars which are grown at this nursery and are popular in the country are *deltoides*, *P. wislizeni* and the Lombardy poplar. The largest portion of the nursery's fruit section was devoted to peach trees, which, with the flowering varieties, thrive in the Johannesburg area. I have seen no better peach trees anywhere.

"The other nurseries which I visited at Johannesburg consisted of only a few acres, and most of the owners also did landscape work in the city. The large quantities of old drums and tins which were piled up around the nurseries gave them an untidy appearance. Because of the short dormant season at Johannesburg, all types of trees and shrubs up to fifteen or sixteen feet in height are potted in these tins and offered for sale throughout the entire year. Dealers buy up old meat, jam, gasoline and biscuit tins and oil drums and bring them to the nurserymen. July and

August are the only months suitable for digging trees from the open ground.

"After visiting the nursery of the Messrs. Herroldts, I went to the City Hall to see Mr. Van Balen, director of parks and estates, who had converted a rough, precipitous plot of ground which had been given to the city into a beautiful rock garden containing South African indigenous trees, shrubs and plants. This garden, now the most popular at Johannesburg, is designed so that visitors on arrival are directed to paths which ascend gradually and then descend sharply so that even elderly visitors can see the entire garden without becoming fatigued. When I visited the colorful garden, it contained proteas, erythrinias, ericas, *Podalyria caltyprata*, *Polygala virgata*, *Greyia sutherlandi*, *dimorphotheca*, *Scilla natalensis*, *Leucadendron discolor*, *Aster fruticosus* and other plants.

"I also toured the city of Pretoria, where the most outstanding feature is the government building, which stands on top of a hill about a mile from the center of the city, surrounded by magnificent gardens laid out on the terraces that cover the slope. This amazing show place is kept in beautiful condition by many gardeners who were busy watering lawns and flower beds, which were a blaze of color at that time.

"After leaving Pretoria, I went to Cape Town, where I was met by a South African who had worked at my nurseries at one time. He is now nursery manager for Pickstones Nurseries, Ltd., Simondium, and his father is managing director of the firm. The nurseries' annual output of 500,000 fruit trees and vines exceeds that of any other nursery in South Africa. Apple trees are budded on seedlings of a cider variety called Wemmershock, and Northern Spy is used as a dwarfing stock. The majority of the plum trees at the nurseries are Japanese varieties, and most are budded on Mariana. The peach and nectarine trees are budded on seedling peaches, most of the pear trees on seedling pears, which the nurseries have difficulty in growing, and a limited number of the pear trees on Angers quince. East Malling stocks have been used and found unsuitable. Citrus trees are budded on seedling oranges and lemons. When

READY FOR SHIPMENT

The following stock is in storage and can be shipped immediately.

Terms: Cash with order, unless credit is established. C.O.D. must be accompanied with one-fourth cash.

CHERRY

	Per 10	Per 100	Per 1000
60 Bohemian Sweet, 1-yr., 11/16-in.	\$12.00	\$110.00	...
150 Early Richmond, 1-yr., 11/16-in.	11.00	100.00	\$900.00
1000 1-yr., 9/16-in.	9.00	85.00	800.00
400 1-yr., 7/16-in.	7.50	70.00	650.00
240 1-yr., 5/16-in.	5.50	50.00	450.00
104 1-yr., 2 to 3 ft.	4.50	40.00	350.00
20 English Morello, 1-yr., 7/16-in.	7.50	70.00	...
40 1-yr., 5/16-in.	5.50	50.00	...
18 1-yr., 2 to 3 ft.	4.50	40.00	...
120 Osthelm, 1-yr., 9/16-in.	9.00	85.00	...
170 1-yr., 7/16-in.	7.50	70.00	...
82 1-yr., 5/16-in.	5.50	50.00	...
18 1-yr., 2 to 3 ft.	4.50	40.00	...

PLUM

	Per 10	Per 100	Per 1000
360 LaCrescent, 11/16-in.	9.00	85.00	800.00
100 9/16-in.	7.50	70.00	650.00
80 7/16-in.	6.00	55.00	500.00
20 5/16-in.	4.50	40.00	350.00
35 Monitor, 7/16-in.	6.00	55.00	500.00
10 Monitor, 5/16-in.	4.50	40.00	350.00
600 Omaha, 11/16-in.	9.00	85.00	800.00
260 7/16-in.	6.00	55.00	500.00
79 5/16-in.	4.50	40.00	350.00
25 2 to 3 ft.	3.50	30.00	...
70 Opata, 11/16-in.	9.00	85.00	800.00
260 9/16-in.	7.50	70.00	650.00
183 7/16-in.	6.00	55.00	500.00
18 5/16-in.	4.50	40.00	350.00
500 Sapa, 9/16-in.	7.50	70.00	650.00
510 7/16-in.	6.00	55.00	500.00
190 5/16-in.	4.50	40.00	350.00
28 2 to 3 ft.	3.50	30.00	...
100 Toka, 7/16-in.	6.00	55.00	500.00
49 Toka, 5/16-in.	4.50	40.00	350.00
100 Waneta, 11/16-in.	9.00	85.00	800.00
40 9/16-in.	7.50	70.00	650.00
260 7/16-in.	6.00	55.00	500.00
72 5/16-in.	4.50	40.00	350.00
12 2 to 3 ft.	3.50	30.00	...
170 Weber Prune, 11/16-in.	9.00	85.00	800.00
190 9/16-in.	7.50	70.00	650.00
60 7/16-in.	6.00	55.00	500.00
11 5/16-in.	4.50	40.00	350.00

FOREST SEEDLINGS

	Per 100	Per 1000
5000 Ash, Green, 2 to 3 ft.	\$ 4.00	\$35.00
8000 18 to 24 ins.	2.50	22.00
10,000 8 to 12 ins.	1.20	10.00
25 Apricot, 4 to 5 ft.	15.00	...
350 Apricot, 2 to 4 ft.	12.00	...
4000 Buffalo Berry, 8 to 12 ins.	3.50	30.00
100 Caragana, 3 to 4 ft.	8.50	...
2000 2 to 3 ft.	5.50	50.00
10,000 12 to 18 ins.	3.20	28.00
1000 Choke Cherry, row run, 6 to 12 ins.	3.50	30.00
100 Elm, American, 4 to 5 ft.	5.00	50.00
600 8 to 4 ft.	3.70	32.00
12,000 2 to 3 ft.	2.50	20.00
6000 18 to 24 ins.	1.75	15.00
9000 12 to 18 ins.	1.40	12.00
25,000 Elm, Chinese, 12 to 18 ins.	1.70	14.00
60,000 8 to 12 ins.	.80	7.00
7000 Hackberry, 2 to 3 ft.	4.00	35.00
12,000 18 to 24 ins.	3.20	28.00
5000 12 to 18 ins.	2.40	20.00
9000 8 to 12 ins.	1.70	14.00
5400 6 to 12 ins.	1.50	12.00
8000 Black Locust, 3 to 4 ft.	4.00	35.00
1200 2 to 3 ft.	2.90	25.00
1000 18 to 24 ins.	2.10	18.00
5000 8 to 12 ins.	1.40	12.00
500 Honey Locust, 2 to 3 ft.	2.30	20.00
800 18 to 24 ins.	1.80	15.00
1000 12 to 18 ins.	1.50	12.00
300 6 to 12 ins.	1.00	8.00
1000 Honey Locust, Thornless, 2 to 3 ft.	3.00	26.00
4000 18 to 24 ins.	2.40	20.00
45,000 12 to 18 ins.	1.70	14.00
45,000 8 to 12 ins.	1.30	10.00
12,500 Mulberry, 8 to 12 ins.	1.20	10.00
16 Swedish Oak, 18 to 24 ins.	10.00	...
85 12 to 18 ins.	6.50	60.00
265 8 to 12 ins.	5.50	50.00
200 6 to 9 ins.	4.50	40.00

FOREST SEEDLINGS—Cont.

	Per 100	Per 1000
34 Poplar, Norway, 1-yr., 6 to 8 ft.	\$20.00	\$180.00
290 1-yr., 5 to 6 ft.	14.00	120.00
114 1-yr., 4 to 5 ft.	10.00	80.00
80 1-yr., 3 to 4 ft.	7.50	65.00
5 1-yr., 2 to 3 ft.	6.00	50.00
175 Prunus Tomentosa, S, 3 to 4 ft.	15.00	120.00
500 Prunus Tomentosa, 2 to 3 ft.	10.00	80.00
80 Prunus Americana, 5 to 6 ft.	10.00	...
2400 4 to 5 ft.	8.00	70.00
1090 3 to 4 ft.	6.00	50.00
14,160 2 to 3 ft.	4.00	30.00
6000 Walnut, Black, 2 to 3 ft.	3.50	50.00
3000 18 to 24 ins.	4.00	35.00
2000 12 to 18 ins.	3.00	25.00

SHRUBS

	Per 10	Per 100
400 Berberis Thunbergii, 2 to 3 ft.	\$3.00	\$25.00
1200 18 to 24 ins.	2.40	20.00
500 15 to 18 ins.	2.00	16.00
20 Cornus, Goldentwig, 4 to 5 ft.	6.00	...
70 Cornus, Goldentwig, 3 to 4 ft.	5.00	45.00
60 Honeysuckle, Pink Tatarian, 18 to 24 ins.	2.90	25.00
50 Honeysuckle, Pink Tatarian, 12 to 18 ins.	2.00	17.00
60 Honeysuckle, Red Tatarian, 18 to 24 ins.	2.90	25.00
160 Honeysuckle, Zabeli, 18 to 24 ins.	2.50	40.00
30 Philadelphus, Le Moine, 3 to 4 ft.	3.50	30.00
180 2 to 3 ft.	3.00	27.00
70 18 to 24 ins.	2.00	18.00
40 12 to 18 ins.	1.60	14.00
1000 Spiraea, Van Houtte, 18 to 24 ins.	4.50	40.00
40 Snowberry, White, 4 to 5 ft.	3.00	25.00
350 Snowberry, White, 3 to 4 ft.	3.00	25.00

EVERGREEN LINING-OUT STOCK— FIELD-GROWN

Terms: Cash with order unless credit is established. No evergreen orders shipped C.O.D. Packing at cost except when cash accompanies order. Evergreens shipped by express unless otherwise directed.

Fresh-dug stock; orders accepted subject to stock being unsold.

	10	100	1000
200 Arborvitae, American, 18 to 24 ins. TTT.	\$0.50	\$0.45	\$0.40
2000 Arborvitae, Chinese, 9 to 12 ins. S.	.09	.08	.06
2000 6 to 9 ins. S.	.07½	.06	.04
500 4 to 6 ins. S.	.05	.04	.03
1000 Juniper, Savin, 9 to 12 ins. TTT.	.55	.50	.45
2000 Juniper, Savin, 9 to 12 ins. TTT.	.45	.40	.37½
500 Juniper Scopulorum, 2 to 3 ft. TTT.	1.00	.90	.85
500 18 to 24 ins. TTT.	.80	.75	.70
1000 18 to 24 ins. T.	.50	.45	.35
Juniper, Virginiana, 18 to 24 ins. TTT.	.35	.32½	.30
1000 12 to 18 ins. TTT.	.30	.25	.20
10,000 12 to 18 ins. T.	.20	.17½	.15
5000 9 to 12 ins. T.	.15	.12½	.10
10,000 6 to 9 ins. T.	.10	.08	.06
10,000 4 to 6 ins. T.	.06	.05	.04
Pine, Jack, 12 to 18 ins. T.	.12½	.10	.07½
5000 9 to 12 ins. T.	.10	.07	.05
1000 6 to 9 ins. T.	.06	.05	.03½
1000 Pine, Ponderosa, 18 to 24 ins. T.	.20	.17½	.15
4000 12 to 18 ins. T.	.17½	.15	.12½
4000 9 to 12 ins. T.	.15	.12½	.10
500 Pine, Scotch, 12 to 18 ins. T.	.17½	.15	.13½
1000 Pine, Scotch, 9 to 12 ins. T.	.15	.12½	.10
300 Spruce, Black Hills, 18 to 24 ins. TTT.	1.00	.85	.75
200 15 to 18 ins. TTT.	.75	.65	.50
1000 9 to 12 ins. T.	.20	.18	.15
2000 6 to 9 ins. T.	.15	.12½	.10
200 Spruce, Colorado Blue, 18 to 24 ins. TTT.	1.50	1.25	1.10
500 Spruce, Colorado Blue, 15 to 18 ins. TTT.	1.25	1.00	.80
3000 Spruce, Norway, 6 to 8 ins. S.	.08	.06	.07

ONE-YEAR FIELD-GROWN GRAFTS

	100	1000
500 Juniperus Canadensis Virginiana	.80	.85
2200 Juniperus Scopulorum, Pathfinder	.90	.85
550 Juniperus Scopulorum Welch	.90	.85

PLUMFIELD NURSERIES, INC.

P. O. Box 7

Fremont, Nebraska

KELLY BROTHERS NURSERIES, Inc.

Phone: 764 or 765

Dansville, N. Y.

SURPLUS STOCK

Our Loss • Your Gain

Immediate shipment—usual terms. Wire or phone for prices.

APPLES

2-year

- 1000 Baldwin, 11/16-in.
- 1000 Corliss, 9/16-in.
- 1300 Corliss, 7/16-in.
- 1000 Delicious, 11/16-in.
- 500 Delicious, 9/16-in.
- 500 Delicious, 7/16-in.
- 1000 Early McIntosh, 11/16-in.
- 500 Northern Spy, 11/16-in.
- 500 Stayman Winesap, 11/16-in.
- 500 Rhode Island Greening, 11/16-in.

PLUM on PLUM

2-year

- 300 Abundance, 11/16-in.
- 1000 Bradshaw, 11/16-in.
- 2000 Fellenberg, 11/16-in.
- 400 Lombard, 11/16-in.
- 500 Monarch, 11/16-in.

APRICOTS

2-year

- 200 Moorpark on Plum, 11/16-in.
- 100 Moorpark on Plum, 9/16-in.
- 100 Moorpark on Plum, 7/16-in.

CHERRIES

2-year

- 1000 English Morello, 11/16-in.
- 500 English Morello, 9/16-in.
- 500 Early Richmond, 11/16-in.

PEACH

1-year

- 1000 Halehaven, 11/16-in.
- 1000 Halehaven, 9/16-in.
- 1000 Elberta, 9/16-in.

RED BARBERRY

- 5000 2-yr. Transplants, 18 to 24 ins.

KELLY BROTHERS NURSERIES, Inc.

OREGON - GROWN ROSES

FOR SHIPMENT FROM ILLINOIS

Two-year-old field-grown plants from the Portland area; low-budded on Multiflora japonica.

	Per 10	Per 100	Per 1000
2-year, No. 1.....	\$5.75	\$52.50	\$480.00
2 year, No. 1½ (medium).....	4.50	40.00	- - -

RED VARIETIES

Glowing Carmine
Grass an Tepitz
Red Radiance

PINK VARIETIES

Editor McFarland
Mrs. Charles Bell
Radiance

TWO-TONED VARIETIES

Condesa de Santiago
Edith Nellie Perkins
Hinrich Gaede
Mme. Joseph Perraud
President Herbert Hoover
Tallman

YELLOW VARIETIES

Mrs. Pierre S. Du Pont
Sister Therese (Sœur Therese)
Souv. de Claudius Pernet
Ville de Paris

WHITE VARIETIES

Caledonia
Frau Karl Druschki
K. A. Viktoria
Mme. Jules Bouche

POLYANTHA VARIETIES

Else Poulsen

BRYANT'S NURSERIES

Arthur Bryant & Son
PRINCETON, ILLINOIS

I was at the nursery during the third week in September, the pips were being sown and the apple seedlings were up and at their cotyledon stage. Except for a few overseers and the office staff, all of the nursery employees are colored; they work eleven and one-half hours a day and put in overtime during the busy season.

"Pickstones Nurseries, Ltd., have two branch nurseries, one at George and one at Elgin. They plow with a Caterpillar tractor and are the most modern nurseries in South Africa. They do a wholesale and retail business and ship trees throughout Africa as far north as the Equator. In fact, I saw a consignment of their trees when I visited Gigham Bell's nursery at Nairobi, shipped via Cape Town and Mombasa and then overland by rail.

"When I visited the South African experimental station at Groot Drakenstein, the director confirmed the information given me at Pickstones Nurseries, Ltd., that East Malling stocks were poor. He is at present concentrating on pear stocks, which he is growing for cuttings. If these root freely enough, I believe he may have discovered something useful.

"Elgin, which is from sixty to seventy miles from Cape Town, is the best apple-growing district in Cape Province. The largest growers, Melteno Bros., have 500 acres of trees branched from the ground up; these seemed to be in an excellent state of cultivation when I saw them. The leading varieties were Delicious and Golden Delicious, White Winter Pearmain, Granny Smith, Rokewood, Rome Beauty and Ohinemuri, a variety which originated in New Zealand and which is a good pollinator.

"Among the other nurseries which I visited at Cape Town was that of Messrs. Starke Ayres, who own a large seed and florists' firm and a small retail nursery where a variety of ornamental trees and plants, including roses, are grown. Mr. Ayres came to the Cape forty years ago from Norwich, where he worked for Daniels Bros. Nurseries. The Pearl Nurseries, also at Cape Town, grow about 100,000 roses and a small number of ornamental shrubs.

"Cape Town possesses a large and naturally beautiful botanic garden at the back of Table Mountain. Mr. Werner, the curator, took me through the garden, which is frequently visited by Gen. Jan Christian Smuts, a keen plantsman. Both Mr. Werner and Mr. Van Den Houten, director of Cape Town's attractive municipal gardens in the heart of the city, which I visited also,

SMALL FRUITS

All stock fully dormant.

The following list of material is ready for immediate shipment. All prices F.O.B. Bridgman, boxing at cost. Usual terms. Cash with order earns free boxing.

GRAPES

	Per 100	Per 1000
Concord, 2-l	\$10.00	\$ 80.00
Concord, 1-l	8.00	60.00
Niagara, 2-l	11.00	90.00
Niagara, 1-l	9.00	70.00
Catawba, 2-l	11.00	90.00
Catawba, 1-l	9.00	70.00
Fredonia, 2-l	11.00	90.00
Fredonia, 1-l	9.00	70.00
Delaware, 2-l	14.00	120.00
Delaware, 1-l	11.00	90.00
Van Buren, 2-l	35.00	.....
Van Buren, 1-l	25.00	.....
Sheridan, 1-l	14.00	.....

BLACKBERRIES

Eldorado, No. 1, Medium	3.50	25.00
Transplants		Sold out
No. 1, R.C.		Sold out
Alfred, No. 1, Medium	3.50	25.00
Transplants		Sold out
No. 1, R.C.		Sold out
Early Harvest, No. 1, R.C.		Sold out

BOYSENBERRIES AND DEWBERRIES

Boysenberry (Common), No. 1, tips	5.00	40.00
Boysenberry (Thornless), No. 1, tips	5.50	45.00
Boysenberry (Thornless), 2-yr. transplants	12.00	.....
Lucretia Dewberry, 2-yr. transplants	10.00	.....
Lucretia Dewberry, No. 1, tips	5.00	40.00

CURRENTS

Wilder, 3-yr., heavy	15.00	130.00
2-yr., No. 1	12.00	100.00
Red Lake, 2-yr., No. 1	16.00	.....
1-yr., No. 1	12.00	.....

GOOSEBERRIES

Downing, 2-yr., No. 1	30.00	.....
Houghton, 2-yr., No. 1	25.00	.....
Champion, 2-yr., No. 1		Sold out

BLACK RASPBERRIES

Cumberland, No. 1, tips	4.50	35.00
Logan, No. 1, tips	4.50	35.00
Morrison, No. 1, tips	5.00	40.00

RED RASPBERRIES

	Per 100	Per 1000
Latham, transplants	\$ 7.50	\$ 65.00
1-yr., No. 1	6.00	50.00
Chief, transplants	7.00	60.00
1-yr., No. 1	5.50	45.00
Sunrise, transplants		Sold out
1-yr., No. 1		Sold out
Indian Summer, transplants	8.00	70.00
1-yr., No. 1	6.50	55.00
St. Regis, transplants	7.00	60.00
1-yr., No. 1	5.50	45.00

PURPLE RASPBERRIES

Sodus, No. 1, tips	Sold out
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ASPARAGUS

Paradise and Washington		
3-yr., heavy	4.00	30.00
2-yr., No. 1	2.30	18.00
1-yr., No. 1	1.70	12.00
1-yr., in 10,000 lots		Sold out

VICTORIA RHUBARB

1 1/2-in. end up, whole roots		Sold out
1 to 1 1/2-in., whole roots		Sold out
3/4 to 1-in., whole roots	4.00	35.00
1/2 to 3/4-in., whole roots	3.00	25.00

RED RHUBARB

Canada Red, No. 1, divisions	40.00	350.00
McDonald, No. 1, divisions	30.00	250.00

HORSE-RADISH

Cuttings, 4 to 5 ins.	2.00	15.00
Whole roots	4.50	35.00

BLUEBERRIES

Rencocas (Early), Rubel (Midseason), Jersey (Late).

	Each	Per 10	Per 100
2-yr., 9 to 12 ins.	\$0.40	\$3.50	\$32.50
3-yr., 12 to 18 ins.	.55	5.00	47.50
4-yr., 18 to 24 ins.	.75	7.00	67.50

STRAWBERRY PLANTS

We are in position to give immediate service on Strawberry Plants. Our prices include packing cost. Wire Western Union for fast service. All Strawberry Plants are shipped express unless otherwise specified.

	Per 100	Per 1000	10,000
Premier	\$1.60	\$11.00	\$10.00
Robinson	1.50	10.00	9.00
Dunlap	1.30	8.00	7.00
Temple	1.70	12.00	.....
Fairland	2.00	15.00	.....
Streamliner	3.00	25.00	.....
Gem	2.00	15.00	.....

300 at 1000 rate.

ASK FOR SPECIAL QUOTATIONS ON QUANTITY LOTS.

KRIEGER'S WHOLESALE NURSERY

P. O. Box 116

Telephone 22

BRIDGMAN, MICHIGAN

PENNSYLVANIA SEEDLINGS and TRANSPLANTS

grown at High Altitude, in the heart of the
ORIGINAL PENNSYLVANIA PINE FORESTS

	Per 100	Per 1000
American Red Pine , 2-yr., 2 to 5 ins.	\$4.00	\$30.00
Scotch Pine (Sylv.), 2-yr., 2 to 3 ins.	2.00	18.00
Scotch Pine (Sylv.), 2-yr., 3 to 6 ins.	3.00	25.00
Norway Spruce , 2-yr., 2 to 5 ins.	3.00	25.00
Douglas Fir , 2-yr., 3 to 7 ins.	3.00	25.00
Mugho Pine , 2-yr., spreading	2.50	20.00

Send for list of transplants.

EXCELLENT ROOT SYSTEMS, STURDY PLANTS.

500 at 1000 rate. No charge for packing or boxing when cash accompanies order; otherwise, one-half cash with order, balance C.O.D.

SCHROTH'S NURSERY

Nursery: Pine Flats, Pa.

INDIANA, PA.

EUROPEAN LARCH (*Larix europaea*)

You never fail to make a sale whenever a customer sees the Larch in foliage. One of the most graceful of all evergreens.

	Per 100	Per 1000
2-year, 6 to 9-inch seedlings.	\$ 8.00	\$70.00
2-year, 9 to 12-inch seedlings.	10.00	90.00

EVERGREEN NURSERY CO.

Established 1864

Sturgeon Bay, Wis.

SALE NOTICE! LINING-OUT STOCK

Look for our ad in the May 15 issue.

We are moving our nursery to New Jersey. Most items remaining unsold by May 15 will be handsomely reduced in price. Our A-1 quality remains unchanged.

JOHN VERMEULEN & SON, Inc.
Westbury, L. I., N. Y.

Growers of Quality Lining-out Stock since 1921



spent two years at Kew Gardens, England.

"The wine industry in Cape Province is as old as the Dominion itself, having been introduced by Van Riebeeck in 1653. Wine making now has become so important that the welfare of the western province as a whole depends largely upon the prosperity of the wine farmers. There are 120,000,000 vines in the province, and 45,000 acres are under cultivation. The Cooperative Wine Growers' Association has 3,300 members, and the wine industry is the largest undertaking of its kind in the Commonwealth, second only in importance in South Africa to the gold-mining industry.

"At Paarl, about thirty-five miles from Cape Town, is the largest winery that I have ever seen. When I was there, millions of gallons of wines and brandies were maturing in huge vats, many of which had a capacity of 3,000 gallons.

"Pietermaritzburg, the capital of Natal, situated in a valley surrounded by hills, is one of the most pleasant towns I visited in the Union of South Africa, and I imagine it is one of the oldest. At Pietermaritzburg I visited two tree and shrub nurseries, that of Mr. Carter and that of Mr. English. Although their methods appeared to be somewhat out of date, they had good collections of nursery stock, both tinned and in the open ground. This stock included gardenias, magnolias, hibiscus, abutilon, palms, oleanders, jacarandas, *Pinus insignis*, *P. halepensis*, *P. patula* and *P. longifolia*. *P. insignis*, *P. halepensis* and eucalyptus are the most popular trees for timber in South Africa, with the eucalyptus providing the pit props for the mines at Johannesburg. *Hakea saligna*, as Australian myrtle is called in the area, is used as a hedge plant, and varieties of euphorbia also are used extensively for this purpose. Because these varieties are prickly, they are impenetrable. They have attractive scarlet flowers. Both Mr. Carter and Mr. English operate seed stores along with their nurseries, with Mr. Carter's store being the leading one at Pietermaritzburg.

"Before leaving for Johannesburg, where I boarded a plane for the flight back to England, I visited the botanic garden at Pietermaritzburg. It contained many fine specimen plants, which seemed to me to be the oldest I had seen in all of South Africa."

ELMER PALMGREN, of Palmgren's Nurseries, Glenview, Ill., was elected president in the village elections April 19. He previously had served as village trustee.

SURPLUS LIST

All stock listed is in storage ready for immediate shipment.

	Per 100	Per 1000		Per 100	Per 1000
Cherry, Montmorency, 11/16-in.	\$ 90.00		Hydrangea P. G., 12 to 18 ins.	\$ 25.00	
Cherry, Montmorency, 9/16-in.	70.00		Hydrangea P. G., 2 to 3 ft.	50.00	
Cherry, Montmorency, 7/16-in.	50.00		Hydrangea P. G., 3 to 4 ft.	60.00	
Pear, Kieffer, 11/16-in.	80.00		Lilac, French, Marie Le Grave, 12 to 18 ins.	25.00	
Pear, Kieffer, 9/16-in.	65.00		Lilac Vulgaris Alba, 12 to 18 ins.	20.00	
Plum, Shropshire Damson, 11/16-in.	85.00		Lilac Vulgaris, purple, 12 to 18 ins.	17.50	
Grape, Concord, 2-yr., No. 1	12.00	\$100.00	Lilac Vulgaris, purple, 18 to 24 ins.	25.00	
Grape, Fredonia, 2-yr., No. 1	16.00		Philadelphus, Avalanche, 12 to 15 ins.	15.00	
Grape, Niagara, 2-yr., No. 1	16.00		Philadelphus Coronarius, 12 to 18 ins.	15.00	
			Philadelphus Coronarius, 18 to 24 ins.	20.00	
Elm, American, 5 to 6 ft.	50.00		Philadelphus Coronarius, 2 to 3 ft.	30.00	
Elm, American, 6 to 8 ft.	75.00		Philadelphus Pyramidalis, 12 to 18 ins.	15.00	\$125.00
Elm, American, 8 to 10 ft.	110.00		Philadelphus Pyramidalis, 18 to 24 ins.	20.00	150.00
Elm, Moline, 6 to 8 ft.	100.00		Philadelphus Pyramidalis, 2 to 3 ft.	25.00	200.00
Elm, Moline, 8 to 10 ft.	150.00		Philadelphus Pyramidalis, 3 to 4 ft.	30.00	250.00
Elm, Moline or Vase, 1 1/4 to 1 1/2 ins.	350.00		Philadelphus Pyramidalis, 4 to 5 ft.	35.00	
Elm, Moline or Vase, 1 1/2 to 2 ins.	400.00		Privet, Amur River North, 18 to 24 ins., 3 br. up.	9.00	80.00
Poplar, Lombardy, 5 to 6 ft.	25.00		Privet, Amur River North, 2 to 3 ft., 4 br. up.	12.00	100.00
Poplar, Lombardy, 6 to 8 ft.	40.00		Privet, Ibolium, 3 to 4 ft., 4 br. up.	15.00	125.00
Sycamore, American, 6 to 8 ft.	100.00		Sambucus Nigra Aurea, 3 to 4 ft.	40.00	
Sycamore, American, 8 to 10 ft.	140.00		Spiraea Arguta, 18 to 24 ins.	25.00	
Willow, Pussy, 18 to 24 ins.	20.00		Spiraea Opulifolia, 12 to 18 ins.	15.00	
Willow, Pussy, 2 to 3 ft.	25.00		Spiraea Opulifolia, 18 to 24 ins.	20.00	
			Spiraea Opulifolia, 2 to 3 ft.	25.00	
Taxus Capitata, 30 to 36 ins., B&B	800.00		Spiraea Opulifolia Aurea, 12 to 18 ins.	15.00	125.00
			Spiraea Opulifolia Nana, 12 to 18 ins.	15.00	
Almond, Pink-flowering, 12 to 18 ins.	25.00		Spiraea Vanhouttei, 18 to 24 ins.	15.00	125.00
Almond, Pink-flowering, 18 to 24 ins.	30.00		Spiraea Vanhouttei, 2 to 3 ft.	25.00	200.00
Althaea, Bush, assorted colors, 2 to 3 ft.	20.00	150.00	Spiraea Vanhouttei, 3 to 4 ft.	30.00	
Althaea, Tree Form, assorted colors, 4 to 5 ft.	40.00		Snowberry, Red, 12 to 18 ins.	12.00	
Althaea, Tree Form, assorted colors, 5 to 6 ft.	50.00		Snowberry, Red, 18 to 24 ins.	15.00	125.00
Barberry, Thunbergi, 12 to 15 ins.	16.00	140.00	Snowberry, Red, 2 to 3 ft.	20.00	
Barberry, Thunbergi, 15 to 18 ins.	20.00	180.00	Tamarix Amurensis or Gallica, 18 to 24 ins.	20.00	
Barberry, Thunbergi, 18 to 24 ins.	25.00	220.00	Tamarix Amurensis or Gallica, 2 to 3 ft.	25.00	
Barberry, Thunbergi, 24 to 30 ins.	30.00	280.00	Tamarix Amurensis or Gallica, 3 to 4 ft.	30.00	
Barberry, Red-leaved, 12 to 15 ins.	20.00	150.00	Viburnum Dentatum, 18 to 24 ins.	25.00	
Cornus Sibirica, 18 to 24 ins.	20.00	150.00	Viburnum Lantana, 12 to 18 ins.	20.00	
Cornus Sibirica, 2 to 3 ft.	25.00	200.00	Viburnum Lantana, 18 to 24 ins.	30.00	
Cornus Sibirica, 3 to 4 ft.	30.00	250.00	Viburnum Lentago, 12 to 18 ins.	15.00	
Cornus Sibirica, 4 to 5 ft.	40.00		Viburnum Lentago, 18 to 24 ins.	20.00	
Cornus Lutea, 12 to 18 ins.	15.00		Viburnum Lentago, 2 to 3 ft.	25.00	
Cornus Lutea, 18 to 24 ins.	20.00		Viburnum Lentago, 3 to 4 ft.	35.00	
Cornus Lutea, 3 to 4 ft.	40.00		Viburnum Lentago, 4 to 5 ft.	45.00	
Cydonia Japonica, 12 to 18 ins.	15.00	125.00	Viburnum Opulus, 12 to 18 ins.	20.00	
Deutzia Pride of Rochester, 3 to 4 ft.	40.00		Viburnum Opulus, 18 to 24 ins.	30.00	
Forsythia Fortunei, 18 to 24 ins.	20.00	150.00	Viburnum Opulus, 2 to 3 ft.	35.00	
Forsythia Intermedia, 18 to 24 ins.	20.00	150.00	Weigela Abel Carriere, 2 to 3 ft.	25.00	
Forsythia Spectabilis, 18 to 24 ins.	20.00	150.00	Weigela Eva Rathke, 12 to 18 ins.	25.00	
Forsythia Spectabilis, 2 to 3 ft.	30.00	250.00	Weigela Eva Rathke, 18 to 24 ins.	30.00	
Forsythia Suspensa, 12 to 18 ins.	15.00		Weigela Floribunda, 12 to 18 ins.	20.00	
Forsythia Suspensa, 18 to 24 ins.	20.00		Weigela Floribunda, 18 to 24 ins.	25.00	
Forsythia Suspensa, 2 to 3 ft.	30.00		Weigela Rosea, 2 to 3 ft.	25.00	
Honeysuckle, Bella Albida, 18 to 24 ins.	15.00				
Honeysuckle, Fragrantissima, 12 to 18 ins.	15.00		Bittersweet, 2-yr.	30.00	
Honeysuckle, Fragrantissima, 18 to 24 ins.	20.00		Honeysuckle, Flaming Beauty (Heckrotti),		
Honeysuckle, Grandiflora Rosea, 3 to 4 ft.	35.00		2-yr., No. 1	25.00	
Honeysuckle, Morrowi, 2 to 3 ft.	25.00		Lycium Chinense, 2-yr., No. 1	20.00	150.00
Honeysuckle, Morrowi, 3 to 4 ft.	30.00		Lycium Chinense, 2-yr., medium	12.00	100.00
Honeysuckle, Morrowi, 4 to 5 ft.	40.00				
Honeysuckle, Sibirica, 12 to 18 ins.	15.00		Roses, Bush, 2-yr., XX	60.00	500.00
Honeysuckle, Sibirica, 18 to 24 ins.	20.00		Roses, Bush, 2-yr., No. 1	40.00	350.00
Honeysuckle, Sibirica, 2 to 3 ft.	30.00		Roses, Dwarf Polyantha and Floribunda, 2-yr., XX	50.00	
Honeysuckle, Zabeli, 12 to 18 ins.	15.00		Roses, Dwarf Polyantha and Floribunda, 2-yr., No. 1	40.00	350.00
Honeysuckle, Zabeli, 18 to 24 ins.	20.00	150.00	Roses, Dwarf Polyantha and Floribunda,		
Hydrangea A. G., 12 to 18 ins.	25.00		2-yr., No. 1 1/2	35.00	300.00
			Rose Hansa, 2-yr., No. 1	35.00	300.00

The above is only a partial list of stock available. For a complete assortment of other varieties and grades refer to our Spring Catalog.

Mail us your want list.

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PHONE 104

ONARGA, ILLINOIS

Plant Notes Here and There

By C. W. Wood

In answer to requests from readers of this column for a discussion of *Geum borisi* and *G. heldreichi*, I shall deal with both of these varieties in this article, describing the latter first, because I know less about it.

The Grecian, *G. heldreichi*, is not fully hardy in northern Michigan; so I can say little about it from the long experience needed to pass final judgment on a plant. It is said to require a fair amount of sunshine and to need, like so many plants of its kind, plenty of moisture at the roots. Under these conditions it should produce freely its orange-copper flowers on foot-tall stems from late April or May through October.

On the other hand, *G. borisi*, which is thought to be a hybrid between the strawberry geum, *G. reptans*, and the worthless *G. bulgaricum*, proved to be both hardy and easy. It is not easy to understand where the plant obtained its vivid orange-scarlet flowers, since its supposed parents are yellow-colored. A height of ten inches fits the plant for a front position in the border and for the rock garden. We have found here that *G. borisi* blooms constantly in sun if it always has moisture. In shade it requires less care, but does not grow well in the summertime. One, therefore, has to make a choice before planting it.

Geum species grow readily from fall-sown seeds; named varieties are grown from divisions. An experience here during the war, when labor was difficult to obtain, may hold a hint on the handling of geums in the nursery. We found that we had either to lose all the plants or lose some of the blooms during the summer; so we accepted the latter and moved the geums to deep shade in leafy soil. This proved to be the right decision, for they got along well on a third of the care required in sun.

Butterfly Weed.

I was talking, last summer, to an observant nurseryman of twenty years' experience who told me he had grown the butterfly weed for ten years and had made about ten sales. That kind of situation probably means one of two things: American gardeners do not recognize a good plant when they see it, or we commercial nurserymen do not present our wares in the correct way. A butterfly weed cannot be moved successfully while in bloom, and that is the

only time the average gardener knows there is such a plant. So we have to use a bit of color advertising during spring and fall if we are going to sell many of the plants.

For reasons which should be readily apparent, our common butterfly weed, *Asclepias tuberosa*, should be universally grown. If for no other reason than its period of flowering in summer, when most perennials are bare of color, it deserves attention, but when we consider how much abuse it will stand, the true value of the plant comes to light. That word abuse may not be the right one, for one hears many complaints that the plant is hard to transplant, and, consequently, in some areas it has the reputation of being finicky. As a matter of fact, there are few more accommodating plants. Lack of fertility and moisture, extreme heat or cold and general neglect as to cultivation have little effect on it. *A. tuberosa*, however, should not be transplanted while it is in active growth, especially when the plant has attained age, but

it may be easily and safely moved when dormant.

It is perhaps not necessary to describe the plant, for it is known to most nurserymen. But it seems to be not generally known that, in addition to the orange of the type, *A. tuberosa* has varied to a fairly clear red, almost scarlet, and also to a pale sulphur shade. I know of no present supply of vegetatively reproduced plants of these variants, although seeds producing a wide range of shades are usually available.

Pampas Grass.

In answering the questions of a South Carolina reader about pampas grass, *Cortaderia selloana*, (*C. argentea* of some and *Gynierium argenteum* of others), because of lack of experience with the tender plant, I have

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1000 <i>Taxus Cusp. Vermeulen</i> , 18 to 24 ins.....	3.00
500 <i>Taxus Cusp. Vermeulen</i> , 15 to 18 ins.....	2.50
1000 <i>Taxus Media Hicksi</i> , 15 to 18 ins.....	2.50
1000 <i>Retinospora Plumosa</i> Aurea, 30 to 36 ins....	2.50
1000 <i>Retinospora Squarrosa</i> Velutina, 24 to 30 ins....	2.50
500 <i>Thuja Occ. Pyramidalis</i> , 36 to 42 ins.....	3.00
500 <i>Thuja Occ. Globosa</i> , 18 to 24 ins.....	2.00
500 <i>Thuja Occ. Wareana</i> , 24 to 30 ins.....	2.50
500 <i>Juniperus Excelsa Stricta</i> , 24 to 30 ins.....	2.50
200 <i>Juniperus Chinensis</i> Pfitzeriana, 30 to 36 ins.	3.00

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to rely on a quotation from William Robinson, who wrote in the 1860's:

"What is there growing in garden or wild more nobly distinct and beautiful than the great silvery plumes of this plant waving in the autumnal gusts, the burial plumes, as it were, of our summer too early dead? What tender plant is as effective as this in giving a new aspect of vegetation to our gardens if it is tastefully placed and well grown? Long before it flowers, it possesses more merit for its foliage and habit than scores of plants cultivated indoors for their effect, dasylires, for example, and it would be well worthy of being extensively used if one of its silver-crested wands were never put forth in autumn. It should be planted even far more extensively than it is at present and given deep and good soil, either natural or man-made. The soils of many gardens are insufficient to give it the highest degree of strength and vigor, and no plant better repays one for a thorough preparation, which ought to be freely given when it is considered that one preparation suffices for many years. If convenient, give it a somewhat sheltered position in the flower garden, to help prevent the ceaseless searing away of the foliage which occurs wherever the plant is much exposed to the breeze."

Treatment such as this recommended by Mr. Robinson ought to produce, according to the literature, plants up to twenty feet in height at blooming time.

The Bistort.

A recent letter which I received from a New York nurseryman contains an idea which I think may be of interest to neighborhood growers. He is growing an extensive number of herbs, and, instead of merchandising them in the usual way, he has printed a little circular about each one, telling of their uses for cooking and for medicine in olden times. He has added bistort, *Polygonum bistorta*, to his list, but failing to find much in his books about the plant, he has asked if a few facts about it can be given in this column. I have gathered the following information which may be facts or fancies:

Anne Pratt, writing in the nineteenth century, records that the name bistort originated from the twisted form of the plant's large root. This is black on the outside and red on the inside and is one of the most powerful vegetable astringents. The root also contains tannic and gallic acid in abundance and has been used extensively in tonics. A Mr. Haemstaedt, a German, recorded in the middle of the nineteenth century that

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X indicates number of times transplanted.

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<i>Azalea kaempferi</i> hybrid, X, 3 to 6 ins.	.15	.13
<i>Azalea mollis</i> , XX, 4 to 6 ins.	.25	.23
<i>Azalea mollis</i> , XX, 6 to 9 ins.	.45	.40
<i>Berberis thunbergii</i> , X, 4 to 8 ins.	.04	.03
<i>Buddleia davidi</i> <i>superba</i> , adlg., 1-yr.	.05	...
<i>Buxus sempervirens</i> , X, 3 to 4 ins.	.12	...
<i>Buxus suffruticosa</i> , X, 2 to 4 ins.	.12	...
<i>Calycanthus floridus</i> , adlg., 6 to 10 ins.	.04	...
<i>Celtis occidentalis</i> , adlg., 6 to 12 ins.	.04	...
<i>Chamaecyparis filifera</i> , 4 to 6 ins.	.18	...
<i>Chamaecyparis filifera aurea</i> , X, 8 to 8 ins.	.18	.15
<i>Chamaecyparis lawsoniana</i> , adlg., 3 to 8 ins.	.04	.03
<i>Chamaecyparis lawsoniana allumi</i> , X, 4 to 6 ins.	.15	.13
<i>Chamaecyparis lawsoniana allumi</i> , X, 6 to 9 ins.	.20	.18
<i>Chamaecyparis lawsoniana pendula</i> , adlg., 1-yr., 4 to 6 ins.	.05	.04
<i>Chamaecyparis plumosa</i> , X, 6 to 9 ins.	.18	...
<i>Chamaecyparis plumosa aurea</i> , X, 4 to 6 ins.	.18	.16
<i>Euonymus carrierei</i> , X, 5 to 8 ins.	.10	.08
<i>Euonymus carrierei</i> , XX, 8 to 12 ins.	.15	.14
<i>Euonymus coloratus</i> , X, 4 to 8 ins.	.08	.07
<i>Euonymus fortunei erecta</i> , X, 4 to 8 ins.	.10	.08
<i>Ilex crenata</i> , X, 4 to 6 ins.	.17	.16
<i>Ilex crenata bullata</i> , XX, 4 to 6 ins.	.17	...
<i>Ilex rotundifolia</i> , XX, 4 to 6 ins.	.18	.17
<i>Juniper</i> , Andorra, X, 6 to 9 ins.	.17	.16
<i>Juniperus chinensis pfitzeriana</i> , X, 5 to 8 ins.	.18	.17
<i>Juniperus glauca hetzi</i> , X, 6 to 10 ins.	.18	.17
<i>Juniperus horizontalis glauca</i> , X, 6 to 10 ins.	.18	.16
<i>Juniper</i> , Irish, X, 3 to 8 ins.	.14	.13
<i>Juniper</i> , Irish, X, 8 to 8 ins.	.18	.17
<i>Larix europaea</i> , adlg., 1-yr., 2 to 5 ins.	.03	.02
<i>Leucothoe cataebae</i> , X, 2 to 4 ins.	.12	.11
<i>Pieris japonica</i> , XX, 5 to 8 ins.	.45	.40
<i>Pieris mariana</i> , XX, 8 to 12 ins.	.30	...
<i>Taxus capitata</i> , X, 4 to 6 ins.	.14	.13
X, 6 to 8 ins.	.18	.17
XX, 4 to 6 ins.	.18	.17
<i>Taxus cuspidata</i> , X, 4 to 6 ins.	.13	.12
X, 6 to 8 ins.	.18	.17
XX, 4 to 6 ins.	.18	.17
<i>Thuja elwangeriana</i> , X, 6 to 8 ins.	.18	.15
<i>Thuja globosa</i> , X, 3 to 5 ins.	.12	.11
X, 6 to 8 ins.	.17	.16
<i>Thuja plicata douglasii</i> , X, 4 to 8 ins.	.18	...
<i>Thuja pyramidalis</i> , X, 4 to 6 ins.	.18	...
<i>Viburnum opulus nana</i> , X, 2-yr., 2 to 5 ins.	.10	.09

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2000	Taxus Capitata, 4 to 6 ins., 1-yr.	18.00
2000	Taxus Cuspidata, 4 to 6 ins., 2-yr.	20.00
2000	Taxus Cuspidata, 4 to 6 ins., 1-yr.	18.00
1200	Taxus Intermedia, 4 to 6 ins., 2-yr.	20.00
1200	Taxus Media Hicksi, 4 to 6 ins., 2-yr.	20.00
1300	Taxus Media Hicksi, 6 to 8 ins., 2-yr.	18.00
2000	Thuja Occ. Globosa, 6 to 8 ins., 2-yr.	20.00
4000	Thuja Occ. Globosa, 4 to 6 ins., 1-yr.	17.50
2000	Thuja Occ. Pyramidalis, 4 to 6 ins., 1-yr.	17.50

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JOHNSTOWN, PA.

its tannin was twice as strong as that of the oak bark and said that it might well be used in tanning leather. From the literature available I can find no evidence that it was ever used for this purpose.

Both the leaves and roots were thought by the old herbalists to have "a powerful faculty to resist all poison." *P. bistorta* was used in all forms of pestilence, including the Great Plague, but is not recorded as a success in the latter. Several of the herbals say the root was a good cure for toothaches, and an extract made by boiling the leaves or powdered root was used internally and externally for wounds.

In one of the books on useful plants of the Old World (the reference is not at hand), it is reported that the roots, after the tannic acid was removed, were used as food in Russia and Siberia. This perhaps refers to another species of polygonum. The young shoots and leaves were used as edible greens in Europe and, until recently at least, were used in herb puddings. The seeds of the bistort, like those of its cousin, the buckwheat, were used as animal feed, especially for poultry.

Dianthus Sylvestris.

A reader of this column asked recently for my favorite dianthus species of easy culture. I am glad he added those last two words, for it would be difficult to pick a favorite from the entire list. I think, however, that the plant usually known as *D. sylvestris* would be close to the top of a list of the easy growers. It has been burdened with a number of names, which cause it to be confused with less meritorious kinds of dianthus.

It should be noted at the outset that *D. sylvestris* varies a great deal when grown from commercial seeds and that it is also variable in nature, according to observers of the flora of southern and central Europe, whence it comes. It therefore takes some pains to find a plant to meet Farrer's description of "big flowers of the clearest pink, often smooth at the edges, but sometimes toothed." The best type, which has grassy tufts, from which spring 6 to 9-inch arching stems bearing beautiful flowers in June, is one of the most attractive pinks I ever have seen. It must, however, be given a sunny situation in fairly good, light soil, despite its specific name, which means woods.

Dianthus Neglectus.

If one is prepared to give his plants just a little more than ordinary care, I would suggest *Dianthus neglectus*.

My experience with this plant, most of which has been in the comparatively cool climate of northern Michigan, leads me to agree with Mrs. Wilder, who called it "perhaps the loveliest, the most generous, the most desirable" of the pinks. Certainly, it is more permanent than either *D. alpinus* and *D. callizonus*. If it is given a meager soil, one which gardeners know as the scree, and not too hot a situation, it makes ample mats of narrow, dark green leaves, above which are displayed on 3-inch stems an incredible number of large, yellow-backed, pink flowers in June.

The plant is said to vary somewhat in nature, but not to the extent that many pinks do. It is not surprising that garden-saved seeds often produce a varied assortment of plants, because *D. neglectus* readily mixes with other plants, giving rise to a long list of garden hybrids. Many of them are of more than passing merit, and some are available in this country.

If you have tried *D. neglectus* with poor results, you may be better satisfied with the strain of hybrids known as *D. roysi*, which is said to claim *D. neglectus* as one of its parents. I notice, however, that L. H. Bailey says, on the authority of Dr. Lemperg, a noted Austrian plant student who has specialized in relationships of pinks, that it is thought to be a cross of *D. callizonus* and *D. caesius*. Whatever the origin may have been, seeds of *D. roysi* yield interesting and, in most cases, lovely plants, varying in shades of pink and in height of stem. All are of easy culture, and especially good forms are readily increased from cuttings.

Costmary.

Hundreds of inquiries for sources of supply for plants and seeds cross my desk every year. And it has been amazing that so many persons have asked for costmary, *Chrysanthemum balsamita*, during the past year. It may or may not herald an interest in old plants, but I believe it merits investigation on the part of the neighborhood grower.

Costmary was a favorite of the ancients, because, as one of them put it, of the "sweete scent and savour it casteth." That it could win the favor of moderns is not impossible. Costmary is valued not only for its sweet scent, but also for its tansy-like heads on tall stems and its ample tufts of long, pale green foliage, called Bible leaf in grandmother's day, when the foot-long fragrant leaves were used to mark favorite passages in the Scriptures.

[Concluded on page 29.]

You May Need Some of These

IN STORAGE — IMMEDIATE SHIPMENT

SHADE TREES

	Per 10	Per 100
Lombardy Poplar		
5 to 6 ft., br.	\$2.90	\$25.00
4 to 5 ft., br.	2.20	18.00
6 to 8 ft., whips		
(\$175.00 per 1000)		22.50
Chinese Elm		
5 to 8 ft., transplants	8.00	75.00
5 to 6 ft., root-pruned seedlings	5.50	50.00
4 to 5 ft., root-pruned seedlings	2.50	22.00
3 to 4 ft., root-pruned seedlings	1.20	10.00
Hardy Fruiting Almond		
4 to 5 ft., br.	8.00	75.00

PRIVET

	Per 100	Per 1000
Amur River North		
2 to 3 ft., 5 canes	\$18.00	\$160.00
18 to 24 ins., 3 canes	10.00	90.00

ROSES

No. 1, field-grown	Per 10	Per 100	Per 1000
	\$5.50	\$50.00	\$450.00

American Beauty, deep pink.
 Ami Quinard, dark velvety crimson.
 Briarcliff, rose-pink.
 Condesa de Sastago, copper and pink.
 Cynthia, glowing red.
 Editor McFarland, brilliant pink.
 Frau Karl Druschki, white.
 Golden Charm, fine yellow.
 Grenoble, scarlet-red.
 K. A. Viktoria, white.
 Luxembourg, coppery-yellow.
 Poinsettia, deep velvety red.
 Soeur Therese, chrome-yellow.
 Sunburst, yellow.
 Talisman, apricot gold pink.
 Red Talisman, red.

FALL BULBS

It's time to begin thinking about Tulips, Hyacinths, Narcissi, Crocuses and your other needs. Our price list will soon be ready. Send for it!

TREE SEEDLINGS

	Per 100	Per 1000
Green Ash		
18 to 24 ins.	\$3.00	\$25.00
12 to 18 ins.	1.90	16.00
6 to 12 ins.	1.20	10.00
Chinese Elm		
3 to 4 ft.	4.00	32.00
2 to 3 ft.	2.50	22.00
18 to 24 ins.	1.90	16.00
12 to 18 ins.	1.40	12.00
Hackberry		
6 to 12 ins.	1.75	15.00
Hansen Bush Cherry		
6 to 12 ins.	4.00	35.00
Honey Locust, Thornless		
6 to 12 ins.	1.40	12.00
Locust, Black		
2 to 3 ft.	2.90	25.00
6 to 12 ins.	.90	8.00
Osage Orange		
12 to 18 ins.	1.20	10.00
6 to 12 ins.	.80	7.00
Persimmon, American		
12 to 18 ins.	5.50	50.00
9 to 12 ins.	4.00	35.00
6 to 9 ins.	3.00	25.00
Prunus Japonica		
6 to 12 ins.	7.00	60.00
Walnut, Black		
12 to 18 ins.	3.50	30.00
6 to 12 ins.	2.50	20.00

LINING-OUT STOCK

	Per 100	Per 1000
Cydonia Japonica, layers	\$ 7.00	\$ 60.00
Euonymus patens, R.C.	6.00	50.00
Euonymus rad. coloratus, R.C. from sand	7.00	60.00
Hydrangea PeeGee, layers	12.00	100.00
Juniperus (Juniper) communis depressa, 2-in. pots	25.00	200.00
chinensis pfitzeriana, 2 1/4-in. pots	30.00	250.00
chinensis hetzi, 2-in. pots	25.00	200.00
chinensis hibernica, 2-in. pots	20.00	150.00
Lonicera sempervirens, R.C.	6.00	50.00
Lonicera yunnanensis, 2-in. pots	8.50	70.00
Wistaria sinensis, layers	7.00	60.00

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Coming Events

MEETING CALENDAR.

May 10 and 11, California nurserymen's refresher course, California State Polytechnic College, San Luis Obispo.

May 15 to 17, Georgia State Nurserymen's Association, Jekyll Island.

May 19 to 21, Louisiana Horticultural Association, Roosevelt hotel, New Orleans.

May 22 to 24, Florida Association of Nurserymen, George Washington hotel, Jacksonville.

May 25 to 28, Western Shade Tree Conference, Hotel Senator, Sacramento, Calif.

June 10 and 11, Alabama State Nurserymen's and Florists' Association, Whitney hotel, Montgomery.

June 19 and 20, Mississippi Florists' and Nurserymen's Association, Hotel Buena Vista, Biloxi.

July 17 to 21, American Association of Nurserymen, Fairmont hotel, San Francisco, Calif.

August 8 and 9, National Mail Order Nurserymen's Association, Hotel La Salle, Chicago, Ill.

August 11 and 12, Indiana Association of Nurserymen, Morton Arboretum, Lisle, Ill.

August 19 and 20, West Virginia Nurserymen's Association, Tygart hotel, Elkins.

August 22 to 24, Texas Association of Nurserymen, Driskill hotel, Austin.

August 24 to 26, Southern Nurserymen's Association, Hotel Patten, Chattanooga, Tenn.

September 13 to 15, California Association of Nurserymen, Santa Barbara.

GEORGIA DATES SET.

The dates for the summer meeting of the Georgia State Nurserymen's Association were announced recently. The meeting will be held May 15 to 17 at Jekyll Island.

PLAN SOUTHERN MEETING.

August 24 to 26 are the dates chosen for the summer meeting of the Southern Nurserymen's Association to be held at the Hotel Patten, Chattanooga, Tenn., it has just been announced by James A. Stubbs, Atlanta, Ga., secretary-treasurer.

WEST VIRGINIA DATES.

The dates for the summer meeting of the West Virginia Nurserymen's Association have been changed from August 18 and 19 to August 19 and 20, Secretary F. Waldo Craig, Charleston, has announced. The meeting will be held at the Tygart hotel, Elkins.

CALIFORNIA DATES.

The annual convention of the California Association of Nurserymen will be held September 13 to 15 at Santa Barbara. Headquarters

will be at the Hotel Miramont. Bert Kallman, Kallman's Garden Nursery, Santa Barbara, is the convention chairman.

FLORIDA CONVENTION.

Florida nurserymen will hold their annual meeting in conjunction with the twenty-eighth convention of the Florida State Florists' Association, May 22 to 24, at the Hotel George Washington, Jacksonville.

Sunday night those present will be guests of the retail and wholesale florists of Jacksonville at a buffet supper followed by a fellowship party.

The first business session will open at 9 a. m. Monday in the hotel auditorium, with another session Tuesday morning.

Group meetings will be held Monday and Tuesday afternoons by the nurserymen and the florists, while the greenskeepers will hold their group meetings in the forenoons in order to visit the different links in the afternoons. Full programs are being arranged for the group meetings. Calvin D. Kinsman, Miami, is vice-president representing the nursery group.

AMERICAN NURSERYMAN

The trade display will be much larger and better this year, states C. Leslie Whipp, association secretary.

The hotels have made special convention rates. Reservations should be made direct with the hotels.

MISSISSIPPI PROGRAM PLANS NEAR COMPLETION.

Plans are nearing completion for the program of the annual convention of the Mississippi Florists' and Nurserymen's Association to be held June 19 and 20 at the Hotel Buena Vista, Biloxi. A diversified program which will interest nurserymen, landscape designers and florists, both growers and retailers, is being planned. Social events and displays also are scheduled during the 2-day event.

Assisted by leading designers from bordering states, Jack Jackson, Memphis, Tenn., will conduct the school of floral design. The main feature of the growers' school will be a discussion of the production of flower crops in the open and in protective structures, to be given by expert growers from various sections of the south. Speakers for the landscape school and growers' school include A. F. DeWerth, Texas A. and M.

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2-yr., T.	\$30.00	\$250.00
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Taxus Cuspidata Nana

2-yr., T.	30.00	250.00
4-yr., TT.	50.00	450.00
5-yr., TT.	65.00	600.00

Taxus Intermedia

2-yr., T.	30.00	250.00
5-yr., TT.	50.00	450.00
7-yr., TTT, 10 to 12 ins.	75.00	700.00

Taxus Hicksi

2-yr., T.	30.00	250.00
4-yr., TT.	50.00	450.00
6-yr., TTT.	90.00	850.00

Taxus Hatfieldi

	Per 100	Per 1000
2-yr., T.	\$ 30.00	\$250.00

Taxus Capitata,

cutting type from leaders.		
2-yr., T.	30.00	250.00
5-yr., TT., 15 to 18 ins.	90.00	850.00
12 to 15 ins., seedling type	150.00

Taxus Columnaris Mooni

2-yr., T.	30.00	250.00
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Thuja Pyramidalis

2-yr., T.	30.00	250.00
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Thuja Boothi

2-yr., T.	30.00	250.00
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We cannot accept orders for less than 100 of a size and variety. 250 plants furnished at the 1000 rate. Write in for prices on our B&B evergreens, also, as we believe we are growing some of the finest evergreens to be found.

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College, College Station; Duke Paterson's Rosemont Gardens, Montgomery, Ala.; E. W. McElwee, R. O. Monosmith and F. S. Batson, department of horticulture, Mississippi State College, State College.

PROGRAM FOR CALIFORNIA NURSERY SHORT COURSE.

Speakers and their topics for the refresher course for nurserymen to be sponsored by the California Association of Nurserymen, May 10 and 11, at California State Polytechnic College, San Luis Obispo, have just been announced. The course, the first of its kind to be held in California, is open to all members of the association and to all nonmember nurserymen and their employees.

Housing facilities have been arranged off the campus, and luncheons May 10 and 11 and dinner May 10 will be served in the school's cafeterias. Other meals may be obtained either on the campus or downtown.

Bert T. Kallman, Kallman's Garden Nursery, Santa Barbara, is chairman of the committee in charge of the course, and committee members are Frank James, E. James Nursery, Oakland; Joe D. Beeler, Beeler Bros. Nursery, Inglewood; Elmer

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3 to 6 ins., sdgls.	1.50	10.00
6 to 9 ins., sdgls.	2.50	15.00
9 to 12 ins.	6.00	40.00
12 to 18 ins.	8.00	65.00

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Juniperus Virginiana (Red Cedar)		
1-yr., 2 to 3-in. sdgls.	\$ 3.00	\$25.00
Larix Europaea (European Larch)		
2-yr., 9 to 12-in. sdgls.	10.00	80.00
Picea Alba (White Spruce)		
2-yr., 2 to 4-in. sdgls.	4.00	35.00
Picea Excelsa (Norway Spruce)		
2-yr., 3 to 5-in. sdgls.	3.00	28.00
Willow, Wisconsin Weeping		
18 to 24 ins.	2.75	22.50
2 to 3 ft.	3.50	30.00
3 to 4 ft.	4.50	40.00
Viburnum Americanum (American Highbush Cranberry)		
1-yr., 3 to 6 ins.	3.50	30.00
1-yr., 6 to 9 ins.	5.00	45.00

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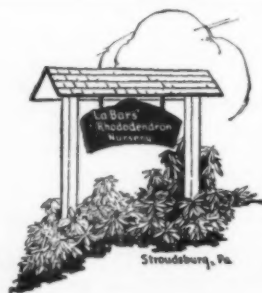
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Merz, executive secretary of the California Association of Nurserymen, Sacramento; Harry Nelson, head of the department of ornamental horticulture, San Francisco Junior College; C. Mavro Warren, Piru; Wilbur B. Howes, head of the department of ornamental horticulture, California State Polytechnic College, and Howard C. Brown, instructor in the department.

Registration for the 2-day course will be held at 8:15 a. m. May 10, and the program is as follows:

MAY 10, 9 A. M.

Welcome to California State Polytechnic College, by Julian A. McPhee, president.

Opening of the course, by Bert T. Kallman, chairman of committee in charge.

"Seeding," by Howard C. Brown, instructor, department of ornamental horticulture, California State Polytechnic College.

"Propagation of Bedding Plants," by Albert Miller, Gold Medal Plants, Inc., Los Angeles.

"Cuttings Grown Without Bottom Heat," by a speaker from the Monrovia Nursery Co., Monrovia.

MAY 10, 1:30 P. M.

"Cuttings Grown with Bottom Heat," by Robert Weidner, Buena Park Nursery, Buena Park.

"Soils and Amendments," by Dr. G. F. MacLeod, Sunland Industries.

"Plant Nutrient Deficiencies," by Dr. Logan S. Carter, head of the department of soil sciences, California State Polytechnic College.

"Budding and Grafting," by George Steelman, Steelman Nursery, Camarillo.

Panel discussion by the day's speakers.

MAY 10, 7:30 P. M.

Program arranged by the department of ornamental horticulture, California State Polytechnic College.

May 11, 9 A. M.

"Plant Breeding and Selection," by Dr. B. Lennart Johnson, department of plant genetics, University of California at Los Angeles.

"Plant Breeding," by Herbert Schwinn, Armstrong Nurseries, Inc., Ontario.

"Retail Nursery Management," by William Clark, Germain Seed & Plant Co., Los Angeles.

"Wholesale Nursery Management," by Harry Rosedale, Monrovia Nursery Co., Monrovia.

"Newer Methods of Plant Propagation," by Dr. V. T. Stoutemyer, head of the division of ornamental horticulture, University of California at Los Angeles.

MAY 11, 1:30 P. M.

"Salesmanship," by Jack Evans, Evans & Reeves Nurseries, Inc., Los Angeles, and Jack McDonnell, McDonnell Nursery, Oakland.

"Accounting," by Philip Bromley, department of economics, California State Polytechnic College.

"Greenhouse Management," by Bert Plath, H. Plath & Sons, Inc., San Francisco, and Frank James, E. James Nursery, Oakland.

"New Developments in Pest Control," by Dr. Pritchard, University of California, Berkeley.

"Horticulture Training in Junior Colleges," by Harry Nelson, head of the de-



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Panel discussion by the day's speakers. Closing of the refresher course, by Frank James, president of the California Association of Nurserymen.

WESTERN SHADE TREE CONFERENCE PLANS.

For the first day's program of the sixteenth annual meeting of the Western Shade Tree Conference, to be held May 25 to 28 at Sacramento, Calif., the subject under discussion will be "An Explanation of Plant Breeding." Speakers will include Woodbridge Metcalf, extension forester, University of California, Berkeley; Dr. Gilbert W. Scott, geneticist, Associated Seed Growers, Inc., and John W. Duffield, geneticist, United States Department of Agriculture forest genetic station, Placerville. Aaron L. Olmstead, landscape architect, California division of highways, will speak at the dinner that evening at the El Rancho motel.

For the morning of the second day, the topic will be "Plant Pests and Diseases and Their Control." Pierre A. Miller, division of plant pathology, University of California at Los Angeles; Laurel Smith, entomologist, Shell Oil Co.; John B. Steinweden, entomologist, California

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Lady Hillingdon
Margaret McGredy
McGredy's Scarlet

Mrs. Chas. Bell
Pink Radiance
Red Radiance
Roslyn
Sunburst
Sœur Therese
Talisman

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CLIMBERS: American Beauty, Dr. Van Fleet, Talisman Climber.
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state department of agriculture, and Dr. D. G. Milbrath, chief of the bureau of plant pathology, California state department of agriculture, will speak. At the luncheon Howard E. McMinn, department of botany, Mills College, Oakland, will be guest speaker.

"The Chemistry of Weed Killers, Adaptation by Commercial Arborists," will be discussed during the afternoon by A. S. Crafts, department of botany, University of California, Davis, and Roger F. Sohner, arborist, San Anselmo. Milton D. Miller, extension specialist in agronomy, University of California, Berkeley, will talk on "Plant Specimen Identification and Management." At the dinner that evening the speakers of the day will hold a panel discussion on the day's subjects.

The program for May 27 will include a talk on "Education and the Conference," by Peter Riedel, of the Santa Barbara park department; a discussion of arboretums by Brian O. Mulligan, director of arboretum, University of Washington, Seattle, and Maunsell Van Rensselaer, director of the Santa Barbara Botanic Garden, Santa Barbara.

Guest speaker for the luncheon at the El Rancho motel will be Donald P. Van Riper, landscape architect, California state division of architecture. The program for the afternoon will be held at Capitol Park, Sacramento, where Keith L. Davey, Davey Tree Surgery Co., Ltd., San Francisco, will give a demonstration talk. Commercial exhibitors and the Sacramento park department will demonstrate equipment.

A banquet that evening in the Empire room of the Hotel Senator will feature the Sacramento Convention Ensemble.

TEXAS LANDSCAPE GROUP PLANS CONVENTION WEEK.

The Texas Landscape Association will sponsor a talk on "Practical Landscape Architecture" by Clarence E. Hammond, landscape architect at Boston, Mass., and Peoria, Ill., Wednesday morning at the annual convention of the Texas Association of Nurserymen, to be held August 22 to 24 at the Driskill hotel, Austin.

A graduate of Massachusetts State College, Amherst, and Harvard University, Cambridge, Mass., Mr. Hammond had had several years' experience in city planning gained while working with Harland Bartholomew, St. Louis, Mo.

This talk will be the first contribution of the Texas Landscape Association to the annual convention of the



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IN CARLOTS

American Elm, 1 1/4 and 1 1/2-in.
Thurlo Willow, 5 to 6 ft., up to
1 1/2-in.

Apple, 2 and 3-yr., XX,
1 1/16 and 9/16-in.
Peach, 5/16 up to 9/16-in.

Lesser Quantities of:

Pear, Plum and Cherry.
Berberis Thunbergi, 12 to 18 and
18 to 24 ins.
Forsythia, Honeysuckle Bush,
Spiraea and Symphoricarpos in
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Shrubs and Roses**
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American Arborvitae		Per 100	Per 1000
3-yr. S., 4 to 8 ins.	\$3.50	\$30.00	
2-yr. S., 2 to 4 ins.	3.00	25.00	
Juniperus Horizontalis			
2-yr. S., 4 to 8 ins.	4.00		
Colorado Blue Spruce			
2-yr. S., 2 to 3 ins.	3.00	25.00	
Colorado Blue Spruce, transplants			
4-yr., 4 to 6 ins.	8.00		
Norway Spruce			
2-yr. S., 2 to 4 ins.	3.00	25.00	
Ostrich Plume Ferns. A fine, hardy fern. Large clumps, \$6.00 per 100.			

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3 to 5 feet

ELFGREN NURSERIES

East Killingly, Connecticut

CHINESE CHESTNUT TREES

Blight-resistant.

TREES—TRANSPLANTS—LINERS

THE GOLD CHESTNUT NURSERY

Cowen, W. Va.

Texas Association of Nurserymen. The business meeting of the landscape association will be held the afternoon of August 23.

CONNECTICUT FIELD DAY.

August 24 is the date set for the annual field day of the Connecticut agricultural experiment station, Storrs, according to Dr. James G. Horsfall, director. The event, open to all those interested in agricultural research, will be held at the station's experimental farm at Mount Carmel.

Because the station will hold its seventy-fifth anniversary celebration in 1950, the field day will be omitted next year.

PLANT NOTES.

[Concluded from page 23.]

The actual height of these stems will be largely governed by the care the plant receives. If the soil is fairly rich and the plants are divided often, at least every third year (every other year would be better), a height of five feet or more is not impossible. If a lower growth is desired, a less fertile soil and less frequent division will produce it. The proper place of the costmary, supposedly, is in the herb garden, but it could well serve good purposes in the flower border, especially where spire plants are needed to complete a picture. In any case it needs a sunny, well drained spot, and, if planted where its spreading habits would inconvenience other plants, it should be placed in an enclosure from which its wandering roots cannot spread.

CATALOGS RECEIVED.

Mount Arbor Nurseries, Shenandoah, Ia.—Wholesale descriptive price list of shade and fruit trees, ornamental trees and shrubs, hedge plants, evergreens, vines, roses, perennials and bulbs; 64 pages, 6x9 inches.

Sheridan Nurseries, Ltd., Toronto, Ont., Canada—Wholesale catalog of evergreens, flowering shrubs, shade trees, hedge plants, vines, roses and perennials; illustrated; 64 pages and cover, 7x9 3/4 inches.

Brown Deer Nurseries, Milwaukee, Wis.—Wholesale price list of evergreens and lining-out stock; 6 pages, 8 1/2 x 11 inches.

Norfolk Nursery, Simcoe, Ont., Canada—Wholesale catalog of evergreens, flowering trees and shrubs, shade and fruit trees, hedge plants, roses, vines, perennials, bulbs, berry plants and small fruits; 36 pages and cover, 5x8 inches.

THE business formerly known as Werner Nursery and as Borger Nursery is now being conducted by Edward S. and Edward W. Gilson as Edward Gilson & Son, nursery and orchard, at Perry, O.

PERENNIAL SEEDLINGS

These perennial seedlings are all field-grown in rows, so they are nice, husky little plants.

Delphinium		Per 100
Blackmore & Langdon		
Hybrids		\$4.50
Gold Medal Hybrids		4.00
Daisy, Shasta		3.50
Coreopsis Sunburst		3.00
Aquilegia, Mrs. Scott Elliot		
Hybrids		3.50
Gaillardia Burgundy		3.50
Gypsophila Paniculata		3.00
Hollyhock, Chater's Double		3.50
Platycodon, Giant Blue		3.00
Lathyrus (Perennial Sweet		
Pea), Latifolius (Mixed)		4.00

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FRUIT TREE SPECIAL

Michigan-grown Extra-fine trees

Send your "Want List" at once.

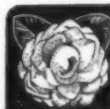
Special on Peach . . . Some Dwarf Pear

"VIRGINIA SEASIDE ROSES"

Our Virginia roses are the best yet. If possible, come to Monroe and look them over; a long list of the best varieties to select from, \$50.00 per 100.

ILGENFRITZ NURSERIES, Inc.

The Monroe Nursery Monroe, Mich.



SEMME'S NURSERIES

AZALEAS - CAMELLIAS
and other choice evergreens.

Wholesale Catalog SEMMES, ALA.

BERBERIS THUNBERGI

Per 100 Per 1000

9 to 12 ins., 2-yr. S.	\$4.00	\$35.00
12 to 18 ins., 2-yr. S.	5.00	40.00

BROUWER'S NURSERIES

Box 25 NEW LONDON, CONN.

Quarantine Rules

BARBERRY REGULATIONS.

Nurserymen who do interstate business in the Japanese barberry, *Berberis thunbergii*, and its varieties should become familiar with the provisions of revised federal black stem rust quarantine, No. 38. This barberry species, which in the past has been free of restriction under the federal regulation, now cannot be shipped interstate except under federal permit. The revision is effective May 1 of this year.

United States Department of Agriculture officials explain that the revision of the quarantine became necessary because of the ever-increasing amount of impure *B. thunbergii* that was getting into the trade. Hybrids, the seeds of which develop into plants susceptible to the stem rust disease, were being found regularly in nurseries and intercepted often in transit. Nurserymen were taking a loss on stock that they had propagated and distributed in good faith and often suffered embarrassment when recently distributed stock was condemned by state and federal inspectors. More serious still was the fact that territory cleared of susceptible barberries by the state and federal governments was becoming reinfested.

Federal quarantine 38, as revised, is designed to prevent the distribution of off-type susceptible stock. It will protect the accomplishments of the barberry-eradication program for the control of stem rust and will preclude losses to seed dealers and nurserymen who, through no fault of their own, might propagate and distribute susceptible stock.

Barberry, mahonia and mahoberberis stock grown for interstate shipment is now subject to the following restrictions:

Plants or plant parts of species or varieties not known to be resistant to stem rust cannot be shipped interstate anywhere within the continental limits of the United States.

Plants of species and varieties, including *B. thunbergii* and its varieties, that have been approved by the chief of the bureau of entomology and plant quarantine of the United States Department of Agriculture can be moved interstate only under federal permit. Mahonia plants without roots, intended for decorative use, are exempt from this provision.

Movement of seeds and fruits of all barberry, mahonia, and mahoberberis into the nineteen barberry-

eradication states from points outside is prohibited. Fruit and seeds of approved varieties produced within the nineteen eradication states can be moved interstate under permit. The eradication states are Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio, Pennsylvania, South Dakota, Virginia, Washington, West Virginia, Wisconsin and Wyoming.

Barberry plants must have had two seasons' growth, and mahonia plants one season's growth, before they may be shipped interstate.

Each package, bundle or other unit in a shipment of plants, seeds or fruit, for which permits are required, shall be plainly labeled to designate the species or horticultural variety.

The revision of foreign plant quarantine No. 37 provided much-needed restriction on imports of barberry and

mahonia stock. Effective January 1, 1949, imports of all barberry and mahonia seeds and fruit—except those to be used for scientific purposes—is strictly prohibited. No species of barberry can be imported to the nineteen eradication states, and only varieties and species approved by the United States Department of Agriculture can be brought into other than the eradication states, and then only under postentry detention.

REVISE WHITE-FRINGED BEETLE QUARANTINE.

A number of materials regulated by the white-fringed beetle quarantine have been exempted from certification requirements under a recent revision of the administrative instructions of the quarantine.

When they are free from soil and have not been exposed to infestation and when sanitation practices are

Wholesale Surplus for Spring Delivery

Concord Grape,
2-yr., No. 1, and 1-yr., No. 1.

Cumberland Raspberry,
Tips and Transplants

Latham and New Logan Raspberry,
Suckers and Transplants.

Boysenberry, Dewberry
Currants and Asparagus Roots

CUTLER & DOWNING CO.
77 Wall St. Benton Harbor, Mich.

HEAVY 2-YR. SHRUBS

FRUIT TREES

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SMALL FRUIT PLANTS

Thirty varieties of Grapes, including the

GOLDEN MUSCAT

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Currants and Berry plants

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BLUEBERRY PLANTS

H. B. Scammell & Son

TOMS RIVER, N. J.

Growers of Blueberries Since 1920.

GROUND COVER PLANTS

Pachysandra terminalis, Per 100 Per 1000
Assorted field-grown
plants \$ 6.00 \$50.00
Vinca minor, 2 1/4-in.
pot-grown plants . . . 10.00 90.00
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Lining-Out Stock Our Specialty
WHOLESALE ONLY

NOW OFFERING A COMPLETE LINE OF SMALL FRUIT PLANTS

We will be glad to quote
on your requirements.

ANDREWS NURSERY CO.
FARIBAULT, MINN.

WE CAN STILL SUPPLY

Apples, fine, 2-year, all grades.
Peach Trees, 1-year-old stock, all
grades and latest popular varieties.
Plums and Apricots—we still have a
good supply.
Cherry Trees, Early Richmond and
Montmorency.
Shade Trees and Evergreens.
A few good Pecans and Roses.
June Bud Peaches, now ready for sale.
Good lot of varieties.

Write for Prices.

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Evergreens—Shrubs
Asparagus—Rhubarb
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The **CHRYSANTHEMUM**
CATALOG you cannot afford
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Ellerson, Va.

EVERGREENS

Seedlings and Transplants

See our advertisement in the April 15 issue.

E. C. MATTHEWS
Harbor Springs, Mich.

maintained to the satisfaction of the inspector, the following articles are exempt: Hay and straw, except peanut hay, uncleaned grass, grain or legume seeds; cinders; true bulbs; corms; tubers, and rhizomes of ornamental plants, when freshly harvested or uncured.

Certification will still be required for soil, compost, manure, peat, muck, clay, sand and gravel, whether moved independently or in connection with nursery stock, plants or other materials (processed clay and washed or processed sand and gravel are not regulated); nursery stock; grass sod; plant crowns or roots for propagation; Irish potatoes, when freshly harvested; peanuts in shells and peanut shells; peanut hay; scrap metal, and junk.

NEW PLANT PATENTS.

The following plant patents were issued recently, according to Rummeler, Rummeler & Snow, Chicago patent lawyers:

No. 827. Chrysanthemum plant. Gustav C. Sparre, Clarkson, Ont., Canada, assignor to John J. Grullemans, Mentor, O. A new variety of chrysanthemum plant, characterized in that its flowers are produced in open clusters, are fully double, are shaped like a cactus dahlia and are large yet graceful in appearance and have an exceptional rose-lilac color. The plant is exceedingly vigorous, of exceptional resistance to disease and of good resistance to drought, and its roots have the ability to withstand severe winters, both protected and unprotected.

No. 828. Rose plant. Herbert C. Swim, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif. A new and distinct variety of rose plant, characterized as to novelty by the color combination of the buds and flowers, size and petalage of the flowers, penetrating and pleasing fragrance of the flowers, high degree of resistance to rust of the foliage, vigorous, bushy and upright growth of the plant, the moderately long, strong and straight stems, with many large and small thorns, and the unusual color of the stems on the side exposed to the sun.

No. 829. Rose plant. Herbert C. Swim, Ontario, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif. A new and distinct variety of rose plant, characterized as to novelty by the vigorous, upright, free-branching habits of growth of the plant, which is abundantly furnished with large leaves highly resistant to mildew; by the color of its flowers and the size thereof, characteristically varying from large in early spring to medium-small in midsummer to medium in the fall and with the number varying more or less in proportion to the size of the flower, extremely double in the early spring, merely double in the summer and extremely double in the fall, with not so many petals in the fall bloom as in the spring.

THE new location of Charles R. Fish & Co. is 39 School street, Auburn, Mass., and mail should be addressed to P. O. Box 125.

CELEBRATING her sixty-fourth birthday by beginning a new business, Mrs. Catherine M. Mills opened the C. M. Mills Nursery & Florist Shop on Sunrise highway, Massapequa Park, N. Y., April 1. Mrs. Mills, who formerly worked as a practical nurse and as postmaster at Wantagh, N. Y., has operated a small nursery at Wantagh since last spring and has done landscaping work at Nassau.

NORTHERN-GROWN LINING-OUT EVERGREENS

Abies balsamea	Per 100	Per 1000
4 to 8 ins.	\$4.00	\$25.00
8 to 12 ins.	8.00	60.00

Thuja occidentalis	Per 100	Per 1000
3 to 6 ins.	3.00	20.00
6 to 12 ins.	5.00	40.00

Tsuga canadensis	Per 100	Per 1000
4 to 8 ins.	4.00	25.00
8 to 12 ins.	5.00	40.00

All the above stock is first-quality collected seedlings.

NURSERY-GROWN HEMLOCKS

Tsuga canadensis	Per 100	Per 1000
8 to 12 ins.,		
2-yr. transplants.	\$16.00	\$150.00

12 to 15 ins.,		
2-yr. transplants..	25.00	

18 to 24 ins.,		
3-yr. transplants..	40.00	

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GENERAL LINE OF ORNAMENTAL STOCK

Both liners and finished
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FAIRVIEW EVERGREEN NURSERIES
Fairview, Pa.

SHADE TREES

Chinese Elm, American Elm, Sugar Maple, Sycamore, Redbud and White-flowering Dogwood. Sizes, 2 to 10 feet.

EVERGREENS

Red Cedars. (Beautiful trees, collected.)

5 to 10 inches.....	\$20.00 per 1000
10 to 15 inches.....	35.00 per 1000
15 to 24 inches.....	7.50 per 100
2 to 3 feet.....	12.50 per 100
3 to 4 feet.....	17.50 per 100

In business 28 years.

ROLLERS NURSERY

Phone: 661 ROGERS, ARK.

30,000 Potted Taxus Liners

1, 2 and 3-year.

Weigela Eva Rathke, transplants.
Viburnum Rhytidophyllum.

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Old English BOXWOOD

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SELLING OUT. Specimens 20 x 18 ins. and up; also very large specimens. No smaller stock left. Special discounts on carload or truckload orders. Prices on request. Inspection invited.

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for Hardy Plants Is

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MENTOR, OHIO
Write for Trade List.

Reviews of New Books

MEMOIRS OF A ROSE MAN.

The brief reminiscences contained in the little volume, "Memoirs of a Rose Man: Tales from Breeze Hill," by Dr. J. Horace McFarland, scarcely indicate the wide field of activities covered by the author in his eighty-nine years, ended last October. His influence on the printing of seed and nursery catalogs was pronounced; he was concerned with conservation and civic improvement, but his outstanding interest was in garden plants, with the rose at the forefront. So most of the sixteen short chapters in this volume are concerned either with roses or rosarians, and most of the twenty-three illustrations have also to do with them. Sketchy as they are, these brief memoirs reflect the personality of the man, whose autobiography would have contained much of interest, had he written one. The book is published by the Rodale Press, Emmaus, Pa., and priced at \$3.

TREE AND SHRUB MANUAL.

In the second edition of "The Home Book of Trees and Shrubs," J. J. Levison has revised and expanded the volume, which is designed to teach the amateur how to devise a correct plan for the selection and handling of trees and shrubs for his home grounds. Published by Alfred A. Knopf, Inc., New York, at \$10, the 519-page book is a manual of trees and shrubs, their selection, identification, planting and care.

More than 300 half-tone illustrations show various types of trees and shrubs, ranging from a giant cactus to a European weeping beech. After describing the structure, habits and requirements of trees, the author classifies the trees according to shape and form, stressing that they should always be chosen to conform to their environment. He uses illustrations to point out the advantages of planting home grounds to obtain privacy and a simple, natural effect.

An extensive list of trees and shrubs suitable for planting large and small homes, rock gardens, roof gardens, terraces, lawns, streets, highways and parks is included, as well as a list of worth-while, unusual trees and shrubs. The author suggests ways of determining if a tree is ailing and lists possible causes and remedies for various troubles.

In one chapter of the book, Mr. Levison explains how to cut branches from a tree and how to care for the wound which results. Methods of

bracing trees that tend to split also are described, and illustrations show correct and incorrect practices.

There are four tables which give the colors, blooming periods, heights and other information about the flowers which the author considers best for borders. A list of the flowering shrubs and small trees that are best suited to a background for a flower bed, a list of herbs, their uses and cultural requirements, and a list of plants for naturalizing also are included in the book.

Mr. Levison, formerly a staff lecturer on the planting and care of ornamental and shade trees at the forestry school, Yale University, New Haven, Conn., tells how to identify the most common trees and shrubs and in the last chapter of his book includes a list of "some good books on trees and shrubs."

HOME LANDSCAPE.

"You Can Landscape Your Own Home" is a brief presentation of fundamental ideas in design simply presented for the instruction of the average homeowner. The author, Franc P. Daniels, for twenty-three years was a part-time lecturer on horticultural subjects at the University of Minnesota agricultural school,

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Anna, Illinois

1000 DWARF APPLE, DOUGIN, ONE-YEAR (MALLING V) (STOCK GROWN BY US FOR 40 YEARS), 3 to 5 ft. McIntosh, Cortland, Double Red Delicious, Red Rome (Galila).

RED LAKE RED CURRANT, heavy, 2-yr., No. 1.

STANDARD APPLE TREES, various, 1 1/2 to 3-in., 7 to 9 ft., bearing.

AMERICAN ARBORVITAE, up to 10 ft. LILACS ON OWN ROOTS, leading varieties, flowering, up to 7 feet.

HEAVY PLANTS FOR LANDSCAPING. Write for List.

SAMUEL FRASER NURSERY
GENESEO, N. Y.

WELLER'S PERENNIALS

With That Wonderful Root System

Headquarters for

HARDY MUMS AND PHLOX.

Ask for our Perennial Catalog.

WELLER NURSERIES CO., Inc.

Leading Perennial Growers

HOLLAND, MICH.

while for the past thirty-six years he has operated his own nursery and landscape business. So, recognizing the problems of the small homeowner, he attempts to offer guidance so that the planting can be done with materials from the local nurseryman, whom the author especially commends on the closing page. The booklet, just published by the Minnetonka Publishing Co., Long Lake, Minn., consists of twenty-eight pages reproduced by the planograph process, bound in stiff paper, at \$1 per copy. Numerous sketches make clearer the concise text.

FIND NEW ROOT DISEASE IN DELAWARE PIN OAKS.

Plantings of pin oak, *Quercus palustris* Muench, at Wilmington, Del., have been found to be severely affected by a virulent new disease. The symptoms, first noticed in 1943, have increased in severity until approximately fifty to sixty per cent of the pin oaks at Wilmington have been affected, and the red oaks have shown similar but less severe symptoms, according to an article in the Plant Disease Reporter for March 15, published by the United States Department of Agriculture.

Hypersensitivity to drought and the appearance of chlorosis on the

NATIVE EVERGREENS

Ilex opaca, American Holly, Kalmia latifolia, Mountain Laurel, Tsuga canadensis, Canada Hemlock.

Per 100 Per 1000

4 to 6 inches.....	\$1.25	\$10.00
6 to 9 inches.....	1.75	15.00
9 to 12 inches.....	2.50	20.00

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BLUEBERRY NURSERY STOCK

Scions, Rooted Cuttings and 1 to 4-yr.-old plants.

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Let us quote on your requirements.

L. J. RAMBO'S WHOLESALE NURSERIES
Bridgman, Michigan

Boyd
NURSERY COMPANY

McMinnville, Tenn.

**ORNAMENTAL SHRUBS
SHADE TREES, VINES
FOREST TREE SEEDLINGS
LINING-OUT STOCKS**

HARDY NATIVE AZALEA

Azalea bakeri, red to crimson

	Per 10	Per 100
5 to 12 inches.....	\$1.50	\$10.00
12 to 18 inches.....	2.00	15.00
18 to 24 inches.....	3.00	20.00

We can ship Azaleas satisfactorily up to June 1.

O. H. PERRY NURSERY CO.
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VERHALEN NURSERY COMPANY
SCOTTSVILLE, TEXAS

Wholesale Growers of
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DAHLIA ROOTS

We grow many acres of standard cut flower varieties for wholesale trade. Most are the kinds that stand hot, dry weather best.

Write today for wholesale price list N.
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We wish to purchase..
Evergreens, Fruit Trees,
Shrubs, etc.

Send your surplus list to
THE PONTIAC NURSERY CO. Romeo, Mich.

FOR PROMPT ACTION

Send us your Surplus List.
GROWERS EXCHANGE, Inc.
Brightmoor Sta., DETROIT 23, MICH.

foliage of the affected limbs are the first symptoms of the disease. These are followed by a necrosis of the margins of the leaves, similar to physiological leaf scorch; this spreads inward, eventually involving the entire surfaces of the leaf blades.

Pronounced growth fissures occur on the trunk, and callous tissue forms over the wounds twice as fast as it would on normal trees. Water sprouts which form on the trunk in the advanced stages of the disease, as well as a fluted condition of the crown, suggest a condition in which the food manufactured in the leaves and translocated to the root system is not utilized by the roots and subsequently stimulates the cambium of the crown to excessive cell production.

Affected trees may be recognized by the tan to brown color and dried appearance of the leaves in autumn in contrast to the bright reddish-brown foliage of healthy trees. Symptoms may begin on individual limbs and spread throughout the tree over a period of several years or may appear throughout the tree in one growing season. The injuries of some of the trees killed by this disease are strikingly similar to the injuries caused by some types of illuminating gas.

Another symptom is the widespread killing of root hairs and fibrous roots of the trees. In an examination of roots from a tree which had almost died from this disease, but which had been restored by the addition of a large amount of organic material and fertilizer to the soil, large numbers of two root pathogenic nematodes, *Hoplolaimus coronatus* Cobb, a migratory parasite which has feed habits that are relatively unknown as yet, and meadow nematodes of the genus *pratylenchus*, endoparasites which feed in cortical tissues of roots and can cause serious failure of several crops and ornamental plants, were discovered. It is possible that *H. coronatus* is either the cause of the trouble or closely related to it.

Symptoms of this disease have been observed also at Washington, D. C., and in Maryland, Pennsylvania and New Jersey.

ED WILSON, of Ed's Florist Shop, Rolla, Mo., has been appointed district representative of Stark Bros. Nurseries & Orchards Co., Louisiana, Mo.

THE nursery formerly owned by A. B. Campbell, Liberal, Kan., has been bought by the Liberal Nursery & Landscape Service, 100 East Tenth street, Liberal, Kan.

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Lake County Meeting

The Japanese beetle problem in Lake county was the main topic for discussion at the dinner meeting of the Lake County Nurserymen's Association, March 30, at Richmond Valley Inn, Grand River, O.

President Robert Kallay, Donewell Nurseries, Painesville, gave an account of the expenses involved in connection with the association's display at the Cleveland home and flower show and reported the amount received for stock sold there. He also read a letter from Mrs. Carl Christiansen, of the Perry Garden Club, complimenting the association on its work in the landscaping of the model homes at the show.

Mr. Kallay read several letters received from Richard P. White, executive secretary of the American Association of Nurserymen, which referred to the wage and hour law as it affects nurserymen.

The meeting then was turned over to John Baringer, specialist in charge of insect and plant disease control, and his assistant, Harold Porter, both of Columbus, and Dr. Joseph Polivka, Ohio agricultural experiment station, Wooster, who presented information concerning the Japanese beetle problem.

Mr. Baringer first reviewed last year's dusting program in Mentor township, Lake county, and assured the members that the money spent yielded good returns. Stating that there were many less beetles in the area last summer than there would have been if no dusting had been done in 1947, he added that there probably would be many less this summer than in the summer of 1948. He pointed out that the dusting had furnished considerable protection against quarantine extension for nurseries outside the beetle area and that a small section of the territory formerly in this area had been released from restriction.

It must be admitted that attempts to control the Japanese beetle have not been and never will be 100 per cent successful, he said. However, the continuation of the dusting program should keep the rest of the nurseries in Lake county out of the Japanese beetle quarantine area for several years.

Because of a recently discovered serious outbreak of Japanese beetles in the Cincinnati area, part of the state funds available for 1949 will have to be used for aiding nurserymen and others there in executing a dusting program which is now

being planned. Mr. Baringer said that the state proposes to use ground sprayer mist blowers and dusters in both the Cincinnati and Lake county areas. The use of airplane dusting for Japanese beetle control has not proved practical. We should receive more for our money if we used mist blowers, said Mr. Baringer. With ground operations, dusting would not be hampered so much by unfavorable weather conditions. We could have five ground mist blower coverages for the same amount of money that three airplane dustings would cost, and a better kill would be obtained because the dusting would be spread over a longer period.

By the use of graphic slides, Dr. Polivka showed the effectiveness of DDT on Japanese beetles last year.

There was considerable discussion on the alleged appearance of more red spiders last year as a result

of the fight against the Japanese beetle. It was pointed out that with the use of mist blowers it would be possible to avoid the blocks of material which had clean cultivation, and if some nurserymen had evergreens which were not attacked by the Japanese beetle, there would be no need to spray them. It might be possible to incorporate an insecticide with DDT which also would suppress red spiders.

Mr. Porter showed a map of the beetle area in Lake county and stated that it will be necessary to extend the treated area to include an additional fifty acres to the east of the area covered last year. He also gave complete statistics on the cost of the dusting program in 1948. Three applications of DDT to 2,850 acres cost \$14,000, or about \$1.60 per acre per application, or \$4.80 per acre for the three dustings. Of this amount \$1.50 per acre was borne by the nurserymen and the rest by the state of Ohio.

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five applications by plane to 3,200 acres is \$25,600. By using the mist sprayers and DDT Xylene-kerosene, the cost would be about one-third of that of last year. The state is considering the use of three mist blowers in the Mentor area this summer. Mr. Porter believes it would be advisable to have these mounted on jeeps rather than on trucks. Taking into consideration the cost of the mist blowers, spraying materials, maintenance and personnel, the total cost for five applications to 3,200 acres would be about \$16,000, slightly more than last year's cost for three applications to 2,850 acres.

Mr. Baringer said that if it was decided to use the ground applications and three machines, putting on the spray wherever possible, spraying could be continued throughout the summer or as long as the beetles showed emergence. If the 350 acres to the eastern section, where beetles were found last year, were added and the suggested plan were followed, the cost would be about \$4.92 per acre compared with \$4.80 last year, and results would yield much more for the money invested.

After these facts were presented, a general discussion was held, during which D. Appel, of the Cole Nursery Co., Painesville, reported that 135 acres of the firm's property had been released from restriction because of the nursery's efforts in treating the soil. He stated that the firm wanted to cooperate with the state program again this year.

Paul Bosley, Jr., Bosley Greenhouse, Mentor, reported that his records showed a great decrease in the number of beetles on his property last year. He believed that the program should be continued at least for another year to see what results might be obtained.

Paul Schumaker, Call's Nursery, Perry, said that the nurserymen at Perry were in favor of continuing the Japanese beetle dusting program and made a motion that it be continued on a cooperative basis with the state of Ohio and that the same fund-raising committee be allowed to serve, with Henry Kohankie, Henry Kohankie & Sons, Painesville, as chairman. The motion was seconded and carried. It was decided that this committee should contact all members of the association and others to raise the necessary funds to carry the project to a successful conclusion. In addition to Mr. Kohankie, the committee includes D. Barrett Cole, Cole Nursery Co., Painesville; Gerard K. Klyn, Inc., Mentor; Paul Schumaker and Steve Allen, Jr., Allen Nursery & Seed House, Geneva.

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Francis A. Robinson, president, is a partner of Robinson & Parnham, member of American Association of Nurserymen in active professional landscape practice for 38 years.

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It was also decided that each member should write a letter to State Representative Jack Easton, at Columbus, stressing how important it is to the nursery industry of Lake county that an appropriation sufficient to combat the Japanese beetle in Ohio be included in the state budget.

Margaret Sessler, Sec'y.

TREAT YELLOW PINE FOR GREENHOUSE USE.

A new pressure treatment for yellow pine lumber may give it the longer life necessary for use in greenhouse structures.

The wood preserving technical department of the Koppers Co. has developed the treatment, which the company states increases 300 to 400 per cent the life of yellow pine submitted to severe conditions of heat and moisture. It was particularly developed for greenhouse application.

"Our newly developed pressure treatment makes the wood resistant to attacks by fungi and insects," said R. H. Bescher, technical manager for the division. "At the same time, the chemicals used in the treatment do not injure plants when they are grown in the treated benches or seed flats."

Mr. Bescher said that the Koppers pressure treatment is based on the use of a preservative, employed for a number of years as a surface protective agent on seed flats and wooden benches. Now, however, the preservative is forced deeply into the wood fibers through treatment in a pressure cylinder, instead of being applied only to the surface.

WALTER GLADYSZ, formerly of Los Angeles, Calif., has opened a new place of business, Walter Florist & Nursery, 1307 East Valley boulevard, Rosemead, Calif.

NEW president of the California Seed Association, elected at the ninth annual spring meeting of the group, is Harry Marks, Germain Seed & Plant Co., Los Angeles. The other officers chosen included J. Vard Loomis, E. C. Loomis & Sons, Arroyo Grande, first vice-president; James MacDonald, William MacDonald Seed Co., Santa Maria, second vice-president, and Ervil S. Fry, Associated Seed Growers of Oakland, secretary-treasurer. Earle E. Humphries, Aggeler & Musser Seed Co., Los Angeles; Wayne Ketron, McCrae Seed Co., and William H. Ramsey, C. M. Volkman & Co., were elected to the board of directors.

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In its educational plan, California State Polytechnic College, at San Luis Obispo, differs from most similar institutions in its "upside down" plan, whereby students take most of their courses involving practical and manual work in the first two years, the courses on theory coming later. Hence, if a student is obliged to leave college after two years, he has technical knowledge which will enable him to get a job, although if he remains to complete the 4-year curriculum he receives substantially the same instruction as in the usual state agricultural and mechanical college.

The horticulture course is different from those at most state institutions because all of the stock grown by the students is for sale; some of it goes at retail, but most of it is wholesaled to florists and nurserymen of the neighborhood. This practice works out to general satisfaction, since the large wholesale growers of either San Francisco or Los Angeles are 200 miles away.

Expansion is being planned of the equipment at the college, which will be relocated about one-half mile from the present crowded site. At present there are two propagating houses or lean-tos, four greenhouses and two lath houses. Only last year two of the greenhouses, each 31x60 feet, were erected, of materials supplied by the Pacific Coast Greenhouse Co., Redwood City, Calif. In addition are a cloth house, several electrically heated hotbeds, two classroom structures and a refrigerator for storage of seeds and bulbs. Approximately four acres are devoted to growing stock.

Eleven courses are given in ornamental horticulture, on plant materials, nursery and greenhouse operations and landscape design. These courses are taught by Wilbur B. Howes, head of the department, and Howard Brown, the latter a product of the institution, having received his B.S. in agriculture from California Polytechnic in 1943.

Early opportunity for inspection of this institution will be given California nurserymen at the time of the refresher course, May 10 and 11, the program of which appears in the column of "Coming Events" in this issue.

CALIFORNIA NOTES.

Business, at least in northern California, in the past few weeks has been good. Few, if any, nurserymen report sales as low as a year ago. Unfortunately, there was so little busi-

ness during the first two months of the year that, in spite of overtime put in by salesmen as well as contractors and home garden maintenance men, the total to date is below that of a year ago.

The agricultural authorities advise that bark of cherry trees split during the cold spell should be tacked back with large-headed tacks. The wound should then be covered to prevent too rapid drying of the surface,



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Photinia serrulata nova - - - - -	12c



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and either a tree seal or wet sacks kept on the damp side for some time will do. If this care is given the trees before the middle of June, it is said that little if any permanent damage will result.

Oregon State Agriculture College reports that savings up to \$50 per acre can be made in strawberry production by the use of the proper chemicals rather than cultivation to control weeds. Additional information on the subject of chemical weed control is contained in a recent bulletin published by the college.

Arthur Navlet is conducting a radio program entitled "The Gaviota Gardener" at 9:30 a. m. every Sunday over station KGO.

In a talk to the Peninsula Garden Club, John Edwards advised camellias be treated to a large extent like annuals, with an "abundance of water in the spring and in August and September and when blooming."

Ned Rucker, designer of the California spring garden show, which will be held April 26 to May 1 at Oakland, says he has planned this year's show to be in keeping with the centennial. Flowers popular 100 years ago will be featured.

Despite recent rains, the total rainfall for the state is below normal for the third year.

Blossom thinning with chemicals is being tried on a large scale this year in Yolo county. If this should be successful on a large scale as it has been on small experimental plots in the past few years, it will be a great factor in lowering fruit production costs by eliminating the expensive chore of hand thinning, which is done by a transient labor group.

The tree nursery at the former Taylor Ranch, at Three Rivers, in Tulare county, is now owned and operated by Paul Spotts.

William T. Hertrick, San Marino, was elected a vice-president at the convention of the American Camellia Society during its Sacramento convention.

Roy Hobbs, nursery department buyer for Sears Roebuck & Co. for ten years, has resigned his position.

Gilbert Brock has resigned his position with the Buyning Nurseries and is opening a wholesale bedding plant nursery at Mar Vista.

W. B. B.

CHARLES W. BYERS, owner of the Ruidoso Nursery, Ruidoso, N. M., has taken over the agency in the Ruidoso area for the Stark Bros. Nurseries & Orchards Co., Louisiana, Mo.

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MORDEN INTRODUCTIONS.

Plant breeding and selection at the Dominion experimental station, at Morden, Man., Canada, are carried on for the purpose of obtaining hardiness in plants which otherwise are enjoyed only in gardens of a milder climate. Introductions are relatively few. Two ornamentals were introduced in 1948, and they have been described by W. R. Leslie, superintendent at the station, as follows:

Prairie Youth rose carries in its parentage Ross rose, Dr. W. Van Fleet, Turks rugosa Samling, Altai and Rosa pratincola. The mother, Morden N 13-4, was pollinated by Prairie Sailor, the first rose to be named at Morden. The new complex hybrid is a hardy, vigorous shrub, growing to a height of five feet. Foliage, which is medium dark green, seems free of mildew and leaf spot diseases. Stems are reddish-brown and moderately spiny. Flowers, semi-double, borne freely in clusters, are a sun-worthy bright salmon-pink, lightly fragrant. Season of full bloom is July, but occasional flowers show until autumn. The variety propagates readily from greenwood cuttings.

Toba hawthorn is a hybrid between a pink form of the double-flowered English hawthorn, Crataegus oxyacantha, and the native fleshy hawthorn, C. succulenta. The tender mother parent, sometimes referred to as the May, or English thorn, was grown in the greenhouse in 1935. A population of 308 hybrid seedlings was set in an orchard row. The vigorous, shapely bush, sparingly thorned, now about thirteen feet tall, appears almost identical with the English hawthorn in leaf and flower, but is full of hardiness. The Toba hawthorn has numerous rich pink petals, lightly fragrant. The flowers, borne in profusion, are showy and long-lasting and retain their pink coloring until the petals drop. The flowers are succeeded by vivid bright red fruits of medium size, persisting deeply into winter.

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PORTLAND ROSES
NURSERY SUPPLIES

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FAIRVIEW, OREGON

Wholesale Only

GOOD WESTERN-GROWN
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Fruit Tree Seedlings
Flowering Ornamental Trees
Shade Trees

Grown right and packed right.
Combination carloads to Eastern
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FRUIT TREES
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ROSES—TREE ROSES

Reservations made for 1949 season.
Good varieties—excellent quality. Write
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Pacific Northwest Rose Nursery
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MILTON NURSERY CO.

MILTON Since 1878 OREGON

Flowering, Ornamental and
Shade Trees

Oregon and Washington-grown
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Our Combination Carlots to
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minimum transportation cost.

Use your letterhead for corre-
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Wholesale Growers
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General Nursery Stock

Largest Growers of Camellias
in Northern California.

Clean healthy stock, can ship every-
where, all container-grown, 1, 4 and
5-gallon cans, 4-gallon, 12-inch redwood
tubs, and 14-inch redwood tubs. Send
for list of over 150 varieties.

Special price on carlots, over 40,000
plants.

LOUIS VISTICA NURSERY

R. R. 2, on U. S. 99 E.
YUBA CITY, CALIF.

CLASSIFIED ADS

25 cents per line.

Minimum order, \$2.00.

AZALEAS

AZALEA LINERS.

We have this year what we believe to be the finest Azalea liners grown in the south. They are grown in almost pure peat moss, and have been cut back with electric clippers from three to five times. They are very bushy and have a wonderful color. During the cold weather we operated our heating plant in these beds and do not have a single plant with split bark. Our prices are the same as for regular liners, and we can furnish the following varieties:

Coral Bella	Double Mauve
Hiawatha	Hexe
Salmon Beauty	Sweetheart Supreme
Jersey Bells	Kaempferi
Orange Macrantha	

\$10.00 per 100, \$90.00 per 1000.

250 of a variety takes the 1000 rate.

Write for our illustrated catalog.

Wholesale only.

BLACKWELL NURSERIES
 Semmes, Ala.

AZALEAS

LINING-OUT STOCK.

Grown in cool houses through the winter. Plants pinched back, will have 3, 4 and 5 shoots and a vigorous root system with a good ball of peat. Can be lined out directly into open ground.

KAEMPFERI	KURUME
Atlanta	Hinodegiri
Carmen	Pink Pearl
Pedora	Snow
Ledifolia alba	\$150.00 per 1000.
\$175.00 per 1000.	

Place your order early.

KOSTER NURSERY

Bridgeton, N. J.

We are booking orders for superior-quality, coldframe-grown Azalea liners for spring delivery at \$10.00 per 100.

KURUME, 4 to 6 ins. INDICA, 6 to 8 ins.

Christmas Cheer

Coral Bella

Hinodegiri

Salmon Beauty

Salmon Queen

Snow

Special quotation on larger quantity.

COTTAGE HILL NURSERY

T. Kiyono, Mgr.

Rt. 2, Box 67-B Mobile, Ala.

HARDY AZALEA LINERS.

Kaempferi—Fedora, Carmen, Louise, Mme. Butterfly, Atlanta. Also, Hinodegiri, Ledifolia alba. Well branched, 6 to 8 ins., \$55.00 per 100. Grown in special mixture producing lightweight ball and large root system. Spring delivery. No packing charge. Cash with order.

GREENSTOCK NURSERY

(Route 112, between Station and Coram)

Port Jefferson Station, L. I., N. Y.

50,000 AZALEA TRANSPLANTS.

Indica alba, Mary, Hinodegiri, Alice.

Amoenae, Hinomayo, Flame, Purple King.

mixed pink kaempferi.

Very heavy rooted.

14c each in 1000 lots; 16½c each in 100 lots.

Packing and shipping extra.

DEKALB NURSERIES, Inc.

Norristown, Pa.

AZALEA TRANSPLANTS—Hinodegiri.

Coral Bella, Pink Pearl, Ledifolia alba.

Sweet Briar, Sweetheart Supreme, Orange

Coral Bella, Hinomayo, Triomphe, Salmon

Beauty, Gardenia Supreme, Spring delivery.

\$14.00 per 100, \$125.00 per 1000.

JOHN WIGMORE, Norman Ave.

Riverside Park, Riverside, N. J.

AZALEAS

Thousands of beautiful plants in many varieties.

Now booking orders for fall. Place your order early to avoid disappointment.

TANKARD NURSERIES

Exmore, Va.

AZALEAS—Well rooted cuttings. See page 36.

Write for list.

MITCH NURSERY

Aurora, Ore.

BERRY PLANTS

SUPERFECTION EVERBEARING

STRAWBERRY—Foundation stock plants,

direct from the originator. The true advanced strain, giving advertising advantages

and prestige to users of my foundation stock plants.

FRANK J. KEPLINGER, originator and owner of HEART-O-MICHIGAN FARMS & NURSERIES, Farwell, Mich.

WONDER STRAWBERRY PLANTS—The

earliest, Campbell's Early, Ripens first part

of May. New, \$1.25 per 500, \$13.35 per 1000.

Knopp's Special, same price, Very large. A

wonder. Send for list of others. WARREN

SHINN'S NURSERY, Woodbury, N. J.

CULTIVATED BLUEBERRY PLANTS—The standard varieties: Rancocas, Rubel, Jersey, Cabot. One-year, \$14.00 per 100; 2-year, \$35.00 per 100; 3-year, \$38.00 per 100. Newer varieties: Weymouth, early June; Burlington, late July; Pemberton, Atlantic, Dixie. One-year, \$35.00 per 100; 2-year, \$8.00 per dozen, \$65.00 per 100; 3-year Burlington, 18 to 24 ins., \$15.00 per dozen, 4-year Burlington, 3 feet high, \$18.00 per dozen. Weymouth and Burlington, the leaders. WARREN SHINN'S NURSERY, Woodbury, N. J.

STRAWBERRY PLANTS—Double-inspected, northern-grown Dunlap, Beaver, Blakemore, \$7.50 per 1000; 10,000 up, \$7.00 per 1000. Premier, Giant Robinson, Belmar, \$9.00 per 1000; 10,000 up, \$8.00 per 1000. Giant Gem, Streamliner of Minnesota, 1166 everbearing, \$15.00 per 1000; 10,000 up, \$15.00 per 1000. These are young, healthy, fresh-dug plants, guaranteed to reach you in good growing condition. IOWA NURSERY, Farmington, Iowa.

STRAWBERRY PLANTS—(Certified).

New land-grown. Guaranteed pure. No

mixed plants. Per 1000

300,000 New Robinson \$ 7.50

500,000 Blakemore 6.00

100,000 Missionary 5.00

20,000 THORLESS HOYSEN-

BERRY, No. 4059 40.00

Packing F.O.B., Stillwell, Okla.

IDEAL FRUIT FARM Stillwell, Okla.

IMPROVED SENATOR DUNLAP STRAW-

BERRY PLANTS. They produce large ber-

ries and we think they are the largest pro-

ducers of them all. Good, strong, double,

state-inspected, irrigated, fresh-dug plants,

guaranteed to reach you in good growing

condition. \$7.50 per 1000. Prices quoted for

larger amounts.

RILEY'S NURSERY Concordia, Kans.

STRAWBERRY PLANTS.

200,000 Robinson, northern-grown and ir-

rigated. Spring-dug. Order now for spring

delivery at \$10.00 per 1000. Also Stream-

liners, Everbearers, same quality, \$22.50 per

1000.

PERCY'S STRAWBERRY NURSERIES

2614 Gull Rd. Kalamazoo, Mich.

STRAWBERRY PLANTS—500,000 new

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Brunes Marvel, \$12.50 per 1000. No 1 fresh-

dug plants grown under irrigation. Giant

Newburg Raspberry plants, \$35.00 per 1000.

McNEAL BERRY NURSERY

Hamilton, Mont.

EVERBEARING STRAWBERRY PLANTS.

Wayzata, \$45.00 per 1000; Gem, \$15.00 per

1000.

ALLENORE NURSERY, Excelsior, Minn.

BULBS AND TUBERS

SELECTED IMPORTED BEGONIAS.

Double Camellia-type; colors, white, red,

yellow, copper, scarlet, orange, salmon, rose-

pink.

Per 100 Per 1000

1½ to 1½-in. \$ 6.00 \$ 50.00

1½ to 2½-in. 9.00 80.00

2 to 4-in., jumbo size 13.00 110.00

250 at 1000 rate.

Cash or C.O.D.

MONARCH PLANT FARMS

Kalamazoo 99, Mich.

SURPLUS, SELECT DAHLIA DIVISIONS.

Amt. Variety Per 100 Per 1000

1000 Gloire de France \$9.00 \$85.00

1500 Orange Ball 8.00 75.00

2500 Springhill Rose 8.00 75.00

1000 Storm King 8.00 75.00

3000 White Fawn 8.00 75.00

500 Yellow Gem 8.00 75.00

Terms: F.O.B. Grand Rapids, Mich. Cash

with order. Subject to prior sale.

FRANCIS W. DU SHANE

2040 DuShane St., N.W. Grand Rapids 4, Mich.

QUALITY CANNAS.

Per 100

Red Humbert \$4.00

Yellow Humbert 4.00

President 4.00

Richard Wallace, yellow 4.00

City of Portland, orange 4.00

MONARCH PLANT FARMS

Kalamazoo 99, Mich.

SPECIAL CANNA SALE.

Good mixed Cannas of best varieties. Presi-

dent, Red King Humbert, Yellow King Hum-

bert, City of Portland, Hungary, Wyoming,

Pennsylvania and Eureka. \$2.50 per 100, or

\$20.00 per 1000.

THE BENTON COUNTY NURSERY CO., Inc.

Rogers, Arkansas

DOUBLE TUBEROSES FROM GUATEMALA.

Per 100 Per 1000

3 to 4 ins. \$4.50 \$40.00

4 to 5 ins. 5.50 50.00

5 to 6 ins. 7.50 70.00

Postpaid.

GUATEMALA BULB IMPORTING CO.

231 E. 86th St. New York 28, N. Y.

LILY BULBS.

Hardy northern-grown Lily bulbs. New,

rare, scarce and unusual as well as standard

varieties. New wholesale list now ready.

Send for your free copy.

J. HENDRIKS, Grower

Box 27 Portage, Mich.

REGAL LILIES.

Clean Dutch-grown stock. Per 100

6 to 7-in. bulbs \$ 8.00

7 to 8-in. bulbs 10.00

8 to 9-in. bulbs 15.00

25 or more of one size at 100 rate.

The WAYSIDE GARDENS CO., Mentor, Ohio

CAMELLIAS

CLASS A:

Beall Rosea

Sarah Frost

Sasanqua, etc.

CLASS B:

Pink Perfection

Brilliant

Hermes

Pope Pius

Kellin Georgia

CLASS C:

Alba Plena

Victor Emmanuel

Lady Vansittart

CLASS D:

Alba Superba

Debutante

Fimbriata

Kumasaika

CLASS E:

Laurel Leaf

Snowdrift

CLASS F:

Mathotiana (Purple

Emperor)

Aspasia

Rev. John Bennett

Gigantea

Lady Mary Cromartie

Rosa Superba

Glen 40

La Reine Var

Magnoliaeflora

Per 100 Rooted cutting 2½-in. pot plants

Class A \$10.00 \$15.00

Class B 12.50 17.50

Class C 17.50 22.50

Class D 25.00 30.00

Class E 35.00 40.00

Class F 50.00 55.00

Our 2½-in. pot Camellias we are offering

this year were rooted last summer and potted

in late summer and fall. Most of them do not

have any top growth, but have good root

system.

Write for complete list of varieties and

quotations on larger quantities.

COTTAGE HILL NURSERY

T. Kiyono, Mgr.

R. 2, Box 67-B Mobile, Ala.

EVERGREENS

EVERGREEN TRANSPLANTS AND

ROOTED CUTTINGS.

Per 100 Per 1000

Boxwood, sempervirens, R.C. \$ 5.00

Abelia grand., R.C. 5.00 \$45.00

Arborvitae, American, R.C. 7.00

American, 4 to 6 ins., X. 15.00

Elegantissima, R.C. 8.00

Tom Thumb, R.C. 15.00

Tom Thumb, golden, X. 15.00

4 to 6 ins., X. 15.00

Pyramidal, R.C. 8.00 75.00

Nigra, R.C. 8.00

Globe, R.C. 7.00 65.00

Globe, 4 to 6 ins., X. 16.50

Juniper, Savin, R.C. 8.00

Irish, R.C. 8.00

Irish, 4 to 6 ins., X. 15.00

Andorra, R.C. 8.00

Pfitzer, R.C. 10.00 95.00

Taxus hicksii, R.C. 8.00

hicksii, 4 to 6 ins., X. 16.50

cuspidata, spreading, R.C. 8.00

cusp. capitata, upright, R.C. 9.00

English, upright, X. 16.50

4 to 6 ins., X. 16.50

English, spreading, X. 16.50

Retinospora plumosa, X. 15.00

4 to 6 ins., X. 15.00

plumosa, 6 to 8 ins., X. 20.00

plisifera aurea, 4 to 6 ins., X. 15.00

plisifera aurea, 6 to 8 ins., X. 18.00

Goldust, 4 to 6 ins., X. 15.00

obtusicaulis, 4 to 6 ins., X. 16.50

ESHAM'S NURSERIES

Frankford, Del.

LINING-OUT STOCK.

Per 100 Per 1000

Acer Palmatum, 1-yr. S. \$ 6.00 \$ 50.00

Ampelopsis vitifolia, 1-yr. S. 2.50 20.00

Juniperus virg., 1-yr. S. 3.50 30.00

Picea excelsa, 2-yr. S. 2.50 20.00

Picea pungens, 2-yr. S. 3.50 30.00

Pinus mughus, 2-yr.

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CLASSIFIED ADVERTISING

RTISING PAGES REMOVED.

PIN OAK SAWFLY.

Identified little over a year ago as *Caliroa lineata*, the pin oak sawfly has spread rapidly in northern New Jersey. Dr. Clyde C. Hamilton, entomologist at Rutgers University, recently described the pest and presented information as to its depredations in a journal series paper of the New Jersey agricultural experiment station.

The adults are small, shiny black, 4-winged insects one-quarter inch long. The larvae are three-eighths to one-half inch long when full grown. The general body color is yellowish-green, the green down the middle of the body being due to green leaf tissues in the digestive tract. The head and thoracic legs are shiny black.

The eggs are presumably deposited in the lower surface of the leaves, and the mature larvae probably drop to the ground, in which they pupate.

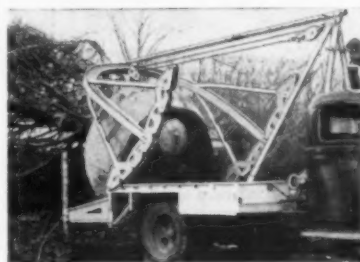
There are apparently at least two broods of the insect a year and possibly more. Larvae and adults can be found almost any time from late May or early June to beyond the middle of September.

The larvae feed on the lower surface of the leaves, leaving the thin upper epidermal layer of cells and the fine network of veins. The injured leaves turn a golden-brown, which, when the feeding is severe, gives a type of injury which can be readily distinguished at a distance against the green background of other trees. The infestation usually starts at the top of the trees and is very noticeable against the green foliage below. Many trees have been noticed with the foliage on the upper one-third or one-half of the tree completely brown, with little injury lower down. In late August and September trees may have all the foliage eaten and completely brown.

The injury of the pin oak sawfly is easily distinguished from that of the Japanese beetle, which feeds from the upper surface of the leaf, eating out all the tissues between the veins. The feeding of the Japanese beetle is usually not so complete on a leaf, and the injured leaves have a darker brown appearance, which can be noticed at a distance.

Little definite experimental work has been done on the control of the pin oak sawfly, although a number of shade tree men have done spraying to control it. To be most effective, a stomach poison must be applied to the lower surface of the leaves. However, the adults spend considerable time on the upper surface of the foliage,

[Concluded on page 49.]



Easy to load and unload big trees. Built-in jacks support rear of truck. Power winch does the work.



Load "rocks" forward, is balanced on truck for easy hauling. This new "rocker" principle is fast and easy.

Williams & Harvey's NEW

"ROCKER" MOVER* for BIG TREES

- Fits any standard truck chassis.
- Handles up to 12-inch trees . . . 7-foot ball weighing 5 tons.
- Two sizes available.
- Superstructure quickly dismantled to permit other uses of truck.
- Neat appearing, strong, sturdy, long-life equipment.

The "Rocker" Tree Mover is in use by hundreds of leading nurseries and Park Departments in all parts of the United States. Its superiority has been proved.

WRITE for details and prices. Let us tell you how to save time and money in your business.

* The "Rocker" Mover is patented.

WILLIAMS & HARVEY NURSERIES

Box 7068, Country Club Sta.

Kansas City 2, Mo.

a complete stock of nursery twines ★



GEO. B. CARPENTER & Co.
440 NO. WELLS STREET • CHICAGO 54

"SINCE 1840"

and all of the best

Need we say more? It has always been our aim, and always will be, to supply the required needs with the best twines the market has to offer.

Those YELLOWING LEAVES may turn GREEN IF YOU SPRAY THEM WITH

For chlorosis due to
Iron deficiency.

Does not contain
Iron sulphate.



4-oz. jar\$1.25
(Makes 1½ gals.)

1-lb. jar\$3.00
(Makes 6 gals.)

SCHUYLKILL CHEMICAL COMPANY Dept. J 2346 Sedgley Ave.
Philadelphia 32, Pa.

Insect Pests of Nursery

At the short course for nurserymen, given at Ohio State University in January, Dr. R. B. Neiswander, department of entomology, Ohio agricultural experiment station, presented an illustrated discussion of the recent investigations on insect pests in the nurseries. These investigations were concentrated chiefly on four of the more common pests, but additional information was obtained on a few other insects.

By means of colored slides, Dr. Neiswander illustrated the different life stages of *Lecanium fletcheri*, commonly known as the taxus lecanium. This insect was troublesome in several nurseries during the past year. Heavy infestations were observed on both yew and arborvitae, with an occasional individual found on juniper plantings. This scale insect overwinters in an immature condition and develops rapidly in the spring, reaching maturity early in June. The mature female is a large brown scale, almost hemispherical in shape and one-sixteenth to one-eighth inch in diameter. Egg laying begins early in June and continues for two to three weeks. The eggs accumulate under the body of the female parent, and after all have been deposited, the body dries up and serves as a protective coating. An average of 520 eggs was found under each scale. The first newly hatched crawler was observed at Perry, O., June 16, and all viable eggs were hatched by July 9. The young feed for a time in late summer and fall, but enter hibernation when only partly grown.

A combination of two gallons of Orthol D and one and three-fifths pints of nicotine sulphate to 100 gallons of water gave eighty-six per cent control of the mature scales when applied June 8. On July 12 to 14, after all viable eggs had hatched, a second application of spray materials was made to determine the best method of killing the crawlers. A 100 per cent kill was obtained with both Parathion and Loro. The oil sprays proved almost as effective, giving a 99.8 per cent kill.

Grape Mealy Bug.

The mealy bug that occurs on taxus in Ohio has been identified as the grape mealy bug, *Pseudococcus maritimus* (Ehrh). It is widely distributed throughout the world and has a wide range of hosts. In the spray experiments carried on by Dr. Neiswander, the mealy bug was ef-

fectively controlled by both Loro and Parathion treatments. The Parathion was sprayed on at the rate of one pound of twenty-five per cent formulation in 100 gallons of water.

Emphasis should be made of the fact that the most opportune time for the application of insecticides for the control of mealy bug on taxus occurs during the latter half of May and the first part of June when the insects are not protected by the masses of white fibrous material produced by the adult females.

The pine needle scale, *Chionaspis pinifoliae* (Fitch), usually attacks several species of pine and spruce and may attack hemlock and fir. It is a conspicuous white scale located on the needles. Perhaps the most effective control measure for this insect is a lime-sulphur spray applied early in the spring. Liquid lime-sulphur at the rate of one part to nine parts of water was applied April 8 at Wooster with excellent results.

Dr. Neiswander reported that as yet no effective control has been found for juniper scale. Parathion applied in August at the rate of one-half pound of a twenty-five per cent formulation to 100 gallons of water

WANT ADS

Help and Situation Wanted and For Sale advertisements.

Display: \$3.00 per inch, each insertion.

Liners: 25¢ line; minimum order \$2.00

SITUATION WANTED

Executive-type nurseryman thoroughly experienced in all phases of nursery procedure, production, wholesale and retail sales, agency and mail order, desires position with reliable concern. Experienced in drawing complete plans and directing work. Excellent sales personality plus broad experience makes a high caliber representative. Available soon. Personal data and business references upon request. Address Box 622, care of American Nurseryman.

SITUATION WANTED

College graduate, nursery management major, desires position with landscape nursery in landscaping, sales or nursery work. Growing experience with wholesale nursery, sales work in lath house and some landscaping. Age 23, unmarried, available June 15. Will start at bottom, experience and future of first importance. Address Box 624, care of American Nurseryman.

SITUATION WANTED

Young man desires a permanent position with a reliable nursery, to be promoted to eventual position of nursery foreman, painting foreman and landscape designer. Attended high school, business college and American Landscape School. Eager to settle permanently. Pleasing personality, steady, sober, ambitious. Address Box No. 623, care of American Nurseryman.

SITUATION WANTED — Married man, age 35, one child, would like on-the-job training for veterans. Raised on nursery; diploma in landscaping, home-study course. Interested mainly in landscaping, experienced supervising small jobs. Can start immediately. Own car. Write: R. J. LUCKHARD, Rt. 1, Littlefield, Tex.

SITUATION WANTED — Reliable married man in early thirties desires a permanent position with a reliable, financially sound concern. Can efficiently manage entire nursery or any department in wholesale, retail or mail-order organization. Broad experience in sales and production and have a good knowledge of plant material in all sections of the U. S. Address Box 621, care of American Nurseryman.

HELP WANTED — Experienced nurseryman who can take complete charge of outside work. House furnished, good wages. CALL'S NURSERIES, Perry, Ohio.

HELP WANTED — Young man, who likes growing, but is mechanically inclined, to invest in a beginning concern. Will receive dividends as the business grows. Write giving all essentials. Write Box 620, care of American Nurseryman.

WANTED — To design landscape plans for nurseries on a 10-per-cent-of-the-cost-of-material basis. Minimum fee, \$100.00. Send a rough sketch, giving exact dimensions, showing location of walks, drives, windows, doors, etc. Will design a detailed planting plan to scale. H. J. BAKER, Landscape Architect, Crawfordsville, Ind.

HELP WANTED

We have an excellent opening for a man with mail order experience who can handle correspondence and assume office management. Good salary. All inquiries strictly confidential.

KELLY BROTHERS NURSERIES, Inc.
Dansville, N. Y.

FOR SALE

Long Island nursery, well established, located on fine road near parkway; 12 acres with sales building, greenhouse, frames and stock. Also 14-acre orchard and large dwelling. Reasonable price.

HORTICULTURAL REALTY CO.
135-18 Northern Blvd. Flushing, N. Y.

PARTNER WANTED

Wanted as partner in established landscape nurseries near Baltimore. Right party may acquire the nurseries and equipment, if desired. Present owner will cooperate in sales and landscape design, so as to divide responsibilities. Unusual opportunity offered. Give outline of experience, available investment, etc. Address box 605, care of American Nurseryman.

WANTED

Agricultural college student, majoring in Nursery and Greenhouse Management, desires summer employment in that field in Philadelphia area. Address:

JAMES J. COYLE
1233 Kenwyn St. Philadelphia 24, Pa.

FOR SALE — Well established landscape gardening and nursery business, excellent location, high-class clientele. South shore Long Island, N. Y. Fully equipped, including 1947 truck, Rototiller, tools, land for growing stock and business headquarters. Retiring. Write Box 618, care of American Nurseryman.

FOR SALE — Nursery, long-established profitable wholesale business, specializing in Mums, with nation-wide distribution. Two nearly new greenhouses, 4,600 sq. ft.; warehouse; garage; 4-room modern house; 4 irrigated acres; all necessary equipment. Write: BUSINESS OPPORTUNITIES, Inc., 600 Oak Grove, Minneapolis 3, Minn.

FOR SALE — 2½ acres of good land, suitable for nursery or similar use. 150-ft. frontage on well traveled street at edge of fast-growing city in central California. 1,600 sq. ft. lath; nicely landscaped. Comfortable 3-bedroom home, plenty of tile and cabinets in kitchen. Large 3-car garage; chicken house. Nice family orchard, variety of grapes, several large walnut trees. Selling because of age and ill health. Write: WALTER SPEER, 2146 E. Fremont St., Stockton 41B, Calif.

New POWER FOR THE NURSERY



At last, the nurseryman can enjoy *riding* power for those ticklish tillage jobs found only in the nursery.

The "creeper gear" throttled down to $\frac{3}{4}$ miles per hour permits power cultivation of the tiniest seedlings. With minimum tread of 36", the Allis-Chalmers Model G can cultivate between wide spaced rows.

The G is equally useful when it comes to plowing, planting, discing, harrowing, furnishing draw-bar power or belt power — in fact for most any kind of a job you expect a tractor to do — plus some you can't do with ordinary tractors.

Rear-engine power offers nurserymen these five advantages:

1. More traction per pound of tractor
2. Fuel consumption in quarts instead of gallons
3. A "creeper gear" for precision work
4. Motorized implements — mounted in front
5. Clear unobstructed vision

Plan now to see your Allis-Chalmers dealer about Model G *rear-engine* power. The initial cost is modest. It offers you new low-cost power advantages for the nursery.

ASK your
Allis-Chalmers
dealer for a free
demonstration.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

SUPPLIES FOR THE NURSERYMAN

**PLAIN and CREPED
WATERPROOF PAPER
KRAFT WRAPPING PAPER—
GUMMED KRAFT TAPE
Paper Towels—Toilet Tissue**

**TWINES and CORDAGE
SISAL, COTTON, JUTE
Baler and Binder Twine
Manila and Sisal ROPE**

Packing, Shipping and Storage Supplies for the Nursery Trade.

Write for samples and prices.

SCHWARZ PAPER CO.

1400-1436 South Canal St.

Chicago 7, Ill.

Branch Houses at: **Madison, Wis.; Bloomington and Peoria, Ill.; Kokomo and South Bend, Ind.**

gave a seventy per cent kill. Dr. Neiswander said that Dr. C. A. Weigel and L. G. Baumhofer, entomologists of the United States Department of Agriculture, suggest a combination of summer oil and nicotine for the control of the young scale. He warned, however, that oil sprays may injure certain pyramidal-type junipers.

Bagworms can be controlled readily by spraying infested plants with arsenate of lead at the rate of one pound to twenty-five gallons of water soon after the eggs hatch. On a few small ornamental plants, they can be held in check by removing and burning the bags during the winter to destroy the eggs.

Excellent control of the spruce mite has been obtained with Dow-spray-17 at the rate of three-fourths pound to 100 gallons of water. NNOR at the rate of one pint to fifty gallons also gives good results.

Parathion proved effective in the control of two-spotted mites, as well as leaf hoppers on dahlias. The plants were sprayed four times at 10-day intervals with a twenty-five per cent formulation of Parathion at the rate of one pound to 100 gallons.

Dr. Neiswander stressed the fact that, while Parathion has proved effective against many of the troublesome pests, it is extremely dangerous to the operator unless adequate safety precautions are used. The safety precautions suggested by the manufacturer should be followed. E. J.

A NURSERY department was recently opened at J. Weingarten, Inc., 2512 University street, Houston, Tex. Approximately 3,000 square feet of space have been devoted to the new Green Thumb Nursery in an area adjoining the store. Two lath houses flank an office building where garden supplies are displayed. During the celebration of the department's opening, gladiolus bulbs were given to customers.

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PIN OAK SAWFLY.

[Concluded from page 45.]

where they can be reached by a residual contact spray such as DDT. Both arsenate of lead sprays and DDT sprays have been used with good results. When these insecticides are applied with the high-pressure hydraulic type of sprayer, the lead arsenate should be used three pounds to 100 gallons of water plus a sticker, and the DDT insecticides should be used so that there is one pound of actual DDT to each 100 gallons of water. This would require two pounds of a wettable powder containing fifty per cent DDT or two quarts of an emulsion containing twenty-five per cent DDT.

Mist blowers have been used with excellent results in applying insecticides for control of the pin oak sawfly larvae. Emulsions containing twenty-five per cent DDT have been used at dilutions varying from one gallon to four gallons of water up to nine gallons of water.

To be effective, spraying must be thorough, and particular attention must be given to the upper part of the trees, since the infestation usually begins in the top of the trees and progresses downward. It is probable that two applications may be necessary to give good protection on shade and ornamental pin oaks. The first treatment should be made in late May or early June, at which time the first injury by larvae has been noticed. The second treatment should be made in the latter half of July, at which time adults from another brood of larvae appear to be abundant.

A BRANCH sales outlet at Sikeston, Mo., has been opened by the Churchill Nursery, Dexter, Mo. Ed Churchill and Paul McConnell will be in charge of the new branch.

VINCENT A. DAURO, who received a bachelor of science degree in horticulture from Mississippi State College, has opened Dauro's Florist & Nursery at 3120 West Beach street, Gulfport, Miss.

OPENING of a new suburban store by Stumpp & Walter Co., New York city, on the site of J. H. Schmidt & Son, Inc., Millburn, N. J., was announced recently by Edwin Carter, president of Stumpp & Walter Co. The Schmidt firm will continue its contracting and landscaping business. During construction of a modern structure with an enlarged parking area, Stumpp & Walter Co. is using the present nursery buildings.

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Ohio Short Course for Arborists

By Donald E. Erskine

UNUSUAL WOODY PLANTS.

Illustrating his talk with slides, George Graves, Boston, Mass., spoke on "New and Unusual Woody Plants" at the short course for arborists and landscape gardeners sponsored by Ohio State University January 12 to 14 at Columbus.

It is difficult to arrive at a manageable list of woody plants when some 6,000 or 7,000 of them must be considered, said Mr. Graves. One should choose plants which are suitable for the area with which he is working and plants which will grow in a normal manner to last a reasonable period of time.

It takes a long time to prove the worth of a woody plant. The best types should be selected rather than just the novelties. Even after a plant is proved, it takes a long time before it is broadly cultivated since the average homeowner does not enter the plant market more than once or twice in a lifetime.

Because they must cater to public tastes to stay in business, nurserymen are often slow to begin growing new or different plants. To try to make up a list of plants that reads like the catalog of an arboretum leads in only one direction, to the poorhouse.

The commercial nurseryman and the landscape planter should carry on from where the trial garden leaves off. They should not ask their customers to do any research for the horticultural trade.

Though too often ignoring the conclusions of authoritative evaluators we should realize that there is often more profit in handling easily grown second-rate plants which can be had from any nurseryman, Mr. Graves stated.

The list of evergreens has been limited since some serious evaluating has been done. We have come to realize that the conventional color for foliage is green and have discarded many of the variegated kinds. Fewer of the garish specimen plants are being used.

Firs are difficult to cultivate, which is to be regretted, since they are among the noblest of trees. Abies concolor seems to be the most adaptable. Dragon spruce, *Picea asperata*, and the Serbian spruce, *Picea omorika*, are among the best of the spruces.

Many pines which are attractive when young have a poor appear-

ance as older trees. The eastern white pine is attractive in all of its aspects. Plants do not have to come from somewhere on the other side of the world to be attractive.

The way to pick a good arbovitae is to see it in winter. In this area, the west coast *Thuja plicata* does better than the eastern arbovitae.

The most interesting evergreens at the present time are yews and hemlocks, if one can grow them, and some of the spreading junipers. These three groups alone can take care of most of the evergreen plantings on small properties. The Canadian hemlock is pleasant to look at, but one could gain much by growing some of the named varieties from cuttings.

Junipers supply some of the better

ground-covering effects if given full sun. Sargent's juniper is excellent. Most of the bigger or upright junipers, with the exception of Pfitzer's, have some practical drawbacks.

Among the deciduous trees of which Mr. Graves thinks wider use should be made are the narrow upright forms for narrow streets and screening. The sentry sugar maple and the columnar forms of Norway maple are good examples of these. The upright forms of some of the smaller flowering trees such as the erect Oriental flowering cherry and

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upright peach should find wider usage. The flowering peach, particularly the white-flowering type, should be pressed into use. But it must be kept in mind that these are short-lived trees, Mr. Graves warned.

Weeping trees are not too popular at the moment, partially, at least, because they have not been grown correctly. They should be grown to form their own leaders with a considerable framework of branches, the tip branches being pendulous much like those of the weeping cutleaf birch.

The Sargent cherry, with pink blooms, makes a tree up to fifty feet high and is longer-lived than most Oriental cherries.

The thornless honey locust is drought-resistant and stands a wide range of soils. It is finding wide use in seaside plantings because its feathery foliage lets the wind through without much resistance.

The shadblow, *Amelanchier laevis*, as a large shrub or small tree, has excellent white flowers to brighten up the spring landscape and has a high value in roadside planting.

Mr. Graves likes the white-flowering redbud better than the regular type. Another good white-flowering plant is the native *Cornus florida*. White forms, in general, should be used more profusely than the colored forms, he believes.

Among the magnolias, the yulan, *Magnolia denudata*, is an excellent white if it does not bloom too early for one's purposes. It becomes a 30-foot tree in time.

The flowering crab apples have displaced the hawthorns almost completely in New England because they grow better, transplant more readily and have fewer ills. The Asiatic types are the most disease-free. Miss Preston's group of Rosybloom crab apples couples good flower effects with ornamental and usable fruits. These types are being used by fruit growers and are part of the Niedzwetskyana complex which have color all through the fruit. Mr. Graves has been told that these types are being grown in commercial orchards in the lower Mississippi valley.

He listed the following crab apples as some of the best: The Carmine crab apple, *Malus atrosanguinea*; Hansen Red crab apple, Hopa, white; Japanese crab apple, *Malus floribunda*, pink; Tea crab apple, *Malus hupehensis*, pink or white; Eley crab apple, vinous-red; Scheidecker crab apple, semidouble pink, and Chinese crab apple, *Malus spectabilis*, semidouble pink.

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with red-checked, persistent yellow fruits in drooping clusters.

Dr. Karl Sax, director of Arnold Arboretum, Jamaica Plain, Mass., has developed some interesting crab apples and a hybrid of *Prunus subhirtella*, named Hally Joliette, which bears pinkish-white flowers.

As for chestnuts, the Oriental castanea is the best to grow because of its resistance to blight and adaptability to poor soil conditions. Two different forms are available. Some are low and bushy, and others make fair-size trees.

The lindens, particularly the small-leaved European species, *Tilia cordata*, and the Crimean linden, *Tilia euchlora*, are adaptable to crowded city conditions.

Among the shrubs, the Japanese barberry can be used, but only where it can grow naturally and need not be sheared. Cole's Truchedge columnberry, *Berberis thunbergii* erecta, is an excellent hedge plant. Hedges are too often ruined by improper shearing practices which result in plants that are open at the base and wide at the top. Something really new in American gardening would be a true understanding of how to grow a clipped hedge, getting it filled in at the base and wider at the bottom than at the top, said Mr. Graves. A hedge is a living architectural feature in which the individual plants lose their identity.

Among the dieback shrubs are *Vitex agnuscastus latifolia* and late-blooming *Lespedeza thunbergii*. Buddleia, or butterfly bush, is another which has recently been improved and is best handled as a big herbaceous perennial. Buddleia alternifolia is a hardy form which does well on dry, gravelly soil.

There are many excellent varieties of flowering quince which should find their way into general planting. These include a wide selection of colors.

Cotoneasters are an interesting group of shrubs, particularly in leaf, habit of growth and fruit. They range in habit from prostrate ground covers to much larger plants, some of which make excellent hedges. As hedges, they should not be sheared but pruned only by removal of the whole stems at the base of the plant. Some of the best ones for this purpose are *C. dielsiana*, *C. divaricata* and *C. hupehensis*.

Forsythia offers a great variation in habit of growth, flower size and hardness. It is too often improperly pruned by chopping off the tops rather than thinning out. Before long someone will have to collect

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forsythias and evaluate them, said Mr. Graves.

Among hydrangeas, the typical paniculata is, according to the speaker, a much more pleasing plant than the too-often-planted paniculata grandiflora.

Euonymus gives pleasant effects in the autumn and particularly in the fruiting stage. Euonymus alatus has a pleasing winter framework, is excellent in fall foliage and, if properly handled, makes a good hedge. Euonymus can be moved successfully all during the growing season.

In general, the viburnums are too rangy for intimate gardens, except those of limited habit such as Viburnum carlesii and V. burkwoodii. Viburnum dilatatum has excellent fruit in the fall.

Mr. Graves thinks it is time the nursery trade standardized its list of lilacs. There are essentially seven main color classifications of lilacs. John Wister worked out a standard list years ago, but little use is being made of it.

Roses should be used as shrubs, claimed Mr. Graves. The descendants of Rose multiflora, more properly called large-flowered polyanthas than floribundas, grow well over winter and can be depended upon. They may be used alone, in hedges or in mass plantings. One can take them out of the rose garden and put them to use.

Arborists do not have to wait for new plants to be developed, Mr. Graves said in conclusion. What is needed is a sense of evaluation of a large and complex group of plants, many of which have been around for some time. If gardeners demand them, the nurseryman will grow them, but not until that time. D. E. E.

HARDY CHRYSANTHEMUMS.

A panel discussion on hardy chrysanthemums, led by Prof. D. C. Kiplinger, department of horticulture, Ohio State University, was a feature of the short course for arborists and landscape gardeners held recently at Columbus. Other members of the panel were Thomas Kyle, Bohlender Nurseries Co., Tipp City, O., and Merle I. Miller, Olenwood Gardens, Worthington.

Professor Kiplinger said that many growers had had trouble with premature bud set during periods of short days and high temperatures. It is now recommended that 60-watt bulbs, spaced about four feet apart and two feet above the plants, be used. The plants are usually being carried at this time in the greenhouse bench. By applying this light for four hours each night, one can keep the plants vegetative. This practice

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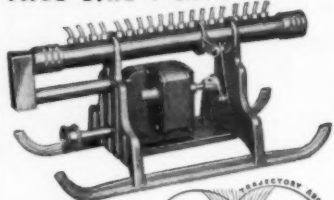
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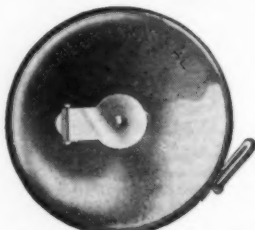
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should be used only with the popular varieties from which one wants to take a quantity of cuttings.

Another practice which has proved successful is the direct potting of unrooted cuttings, using a mixture of one part of sand to one part of soil and one part of manure. The cuttings may be placed in plant bands or in paper or clay pots. They should be watered well at the time of potting and covered with a cloth. After three weeks the pots are ready to set in the bench; this saves about two weeks. Then at the time that a pinch is made one can steal some cuttings and follow the same procedure in rooting them.

Explaining that mum stunt had spread to the hardy mums from the greenhouse varieties, Professor Kiplinger said that some of the symptoms of the disease are a smaller, earlier flower, a smaller leaf and an inferior quality of the entire plant. Little about the disease is known, except that it can be transmitted by insects. The only control which can be practiced is the discarding and burning of stunted plants.

Mr. Miller recommended that one should not sell in spring old clumps that have been held over from the preceding year, but, instead, should sell plants in 5-inch pots.

At Mr. Kyle's nursery plants are carried over winter in a coldframe, placed on sand and covered with sand to provide protection and good drainage, which are essential. The homeowner can carry his plants over winter by cutting them back, which helps to control foliar nematode, and covering them with evergreen boughs.

From 300 to 350 varieties are grown by Mr. Kyle's firm. Each year there are numerous introductions, and the only way to know them is to grow them, he said. He is testing dwarf Lilliputs and new rubellum hybrids from England and reported that many of these varieties appear promising.

Included in Mr. Kyle's list of his most satisfactory hardy chrysanthemums are five cushion types: Major Cushion, pink; Redwood, red; Sunbeam, yellow; Apricot Glow, bronze, and Niobrara, white. The six best single or daisy types he listed as Red Bank, red; Tiffany Rose, pink; Joan Helen, purple; Milky Way, white; Primula, yellow, and Evening Sun, bronze. The most satisfactory large-flowering hardy mums on his list are Violet, purple; Red Velvet, red; Avalanche, white; Betty, pink; Charles Nye, yellow, and Olive Longland, bronze. Good hardy button types are Ruby Pompon, red; Chiquita,

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yellow; Nanook, white; Rosita, pink, and September Bronze, bronze. Of the English mums Mr. Kyle prefers Mrs. T. Riley, white; Coppelia, red; Chester Castle, pink; Mrs. Sutterland, purple; Egypt, bronze, and Gold Standard, yellow. The five early-blooming varieties of large greenhouse mums cited as satisfactory for the garden were Gold Lode, yellow; Major Bowes, pink; Alameda, deep gold; Smith's Early White, white, and Hilda Bergen, reddish-bronze.

Mr. Miller also presented a list of thirty-five varieties of hardy mums which he had found satisfactory. He added that his English varieties had not done well, chiefly because the plants had grown too tall. Since he believes the white varieties set off mums of other colors to the greatest advantage, he suggested that they be used more often.

In a list of hardy mums prepared at Ohio State University in 1948 varieties were rated as follows: Of the pinks, Barbara Small, Lavender Lady, Lavender Lassie and Olive Longland rated best; Heather Bloom and Murmur, second, and Pink Radiance and Rosita, third. In the bronze shades, Egypt was best; no second was named, and Aladdin placed third. Echoes, Golden Cushion and Tints of Fall were the best of the yellows, with Orange Cluster, Charles Nye and Stalwart placing second and Algonquin, September Gold and Yellow Pompon third. The best reds were Burgundy, Courageous, Glowing Coals and Tiger; Chippewa and Sigurd were second, and Caliph and Red Velvet were third. Purity was selected as the best white, with Polar Ice, second, and Drifted Snow and Snowfall, third.

D. E. E.

MIST BLOWERS.

Mist blowers are limited in their capacity for giving adequate coverage in out-of-the-way places and in their capacity for handling air and spray materials, said A. W. Meserve, Danbury, Conn., in a talk on "The Limitations of Mist Blowers" at the recent short course for arborists and landscape gardeners at Ohio State University, Columbus. Their effectiveness also depends upon the ability of the operator to do a good job and the ability of the manufacturer to perfect the machine.

Operators are reluctant to apply formulations which have not been thoroughly tested and had their value established, particularly in view of some damaging claims and discouraging reports. The client has his doubts about the effectiveness of mist spray-

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ing and knows he can depend upon a good job's being done when the materials are applied by the hydraulic sprayer, which has been proved effective.

The mechanics of mist blower development are not generally perfected to handle the formulations which have been developed, and if they were, there are few operators in the east who are willing or able to mix formulations for specific jobs.

Dormant spraying would be practically impossible unless the trees were at the roadside, and even then coverage is not so complete as is needed for scale control. The United States Department of Agriculture and the Connecticut agricultural experiment station list thirty-one insects, most of them shade tree pests, which can be controlled by summer applications with the mist blower. Ninety per cent of these insects are controlled by DDT formulations. This is but a small percentage of the shade tree insects which must be held in check. Anthracnose is one shade tree disease which can be controlled to a fair degree with the mist blower, but work with other diseases has not been encouraging.

In order to control fungus spores, there must be complete coverage at the proper time. One cannot wait for windless days when immediate coverage is imperative.

Mr. Meserve believes that the mist blower will have its place in orchard work when equipment is engineered for complete coverage. It will take considerable time and experimentation with proper nozzles and air volume before the use of mist blowers in the orchard can be perfected.

One of the most serious limitations of the mist blower is its inability to reach inaccessible places, particularly when a brisk wind is blowing into the machine. There would be, however, little difficulty in using the blower around farm buildings, industrial areas, city dumps, city parks, municipal stadiums, beaches, golf courses and similar areas or on the lawn of a large estate for complete coverage of shade trees and for control of flies and mosquitoes. Waiting for the wind to shift is a costly operation. Some operators take a small hydraulic machine along on the job for complete coverage in out-of-the-way mosquito spraying. This means additional investment, of course.

Another obvious limitation of mist blowers is their inability to develop a uniform-size droplet. The size of droplets changes considerably as they are shattered by the air blast and as air dilution increases. The nozzle arrangement, the pressure, the orifice

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size, the angle at which the insecticide is introduced into the air stream, the direct pressure-type nozzle or the air velocity nozzle and many other factors have an effect upon the desired atomization. It is not an easy assignment to match the combination spray used with the ideal wetting agent, pump it through the perfect-size orifice under an air blast of 150 miles per hour, complete the atomization, carry it to the object which is to be sprayed and then deposit it in droplets with an average diameter of thirty-five to sixty micra.

Insufficient air is a common limitation. United States Department of Agriculture scientists recommend an air volume of 12,000 to 15,000 cubic feet per minute and a velocity of 150 miles per hour. This will necessitate a 35 to 40-H.P. engine. Such a volume will blow a spray 100 feet into the air and 200 to 300 feet horizontally. For greatest efficiency, the air stream should come straight off the blower; it should be available for up and down directional spraying. If the wind direction is favorable, spray drifts may go a distance of 1,000 feet under ideal conditions.

If highly volatile liquids, such as acetone and water, are drifted in finely atomized form, the tiny droplets quickly evaporate and disappear. The operator must thoroughly understand the properties of the materials he is applying so that he can be sure the materials are reaching the object in proper form so that adherence is assured.

The following suggestions for improving the present mist blowers have been advocated and are under experimental study: 1. The over-all development of a well balanced, compact machine to take the place of cumbersome equipment. 2. An accurate low-speed speedometer. 3. A quick shut-off valve. 4. A dual gun arrangement for different distances and some device for spreading or concentrating air volume, and a mechanical control that will provide soft coverage for close-up spraying and sufficient volume for high trees. 5. A nonabrasive resistant pump and a pressure regulator capable of handling all mixtures at the necessary pressure. 6. A metering system or regulation of spray output per tree or per unit area. 7. A nozzle or combination of nozzles which will introduce and uniformly fill concentrates into the air stream. 8. A development for easy up and down spraying. 9. The development and installation of noncorroding, round-bottom, easy-to-clean tanks.

Mist blower spraying affords an opportunity for the spray material manufacturer to package mixtures of



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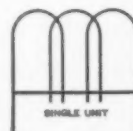
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Some legal limitations have been placed on the use of mist blowers in weed control work involving the use of 2,4-D or other herbicides due to excessive amounts of drift under certain conditions.

Mist blowers cannot be operated at a small fraction of what it costs to operate the hydraulic machine, as many have been led to believe. Those operators who insist upon slashing prices can easily put themselves out of business.

In conclusion, Mr. Meserve stressed the fact that he is not opposed to the use of mist blowers and said he would not part with his machine under any circumstances. He suggested that one ask himself if his business warrants such a machine to supplement present equipment and if he can afford it. The question is not: "Will it replace my hydraulic machine" but "Will it make my program easier, more efficient and still profitable?" If it will, one should look over the field of available machines and choose the one with the minimum of limitations. D. E. E.

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